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LAUXANIIDAE (DIPTERA) OF MALAYSIA (PART 2) : A REVISION OF HOMONEURA VAN DER WULP

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Abstract

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The Malaysian species of the genus *Homoneura* are revised. Of the 69 species studied, 24 are new to science, 2 species belonging to the subgenus *Chaetohomoneura*, 2 to *Minettioides*, 1 to *Euhomoneura*, and 19 to *Homoneura* ; 13 species are newly recorded from Malaya, 13 from Borneo (Sabah and Sarawak) and 16 from Malaya and Borneo. External and internal male genitalia are illustrated. Attention was paid to the protandrium of the male genitalia in recognizing species and species groups. Cladistic analysis was attempted for the subgenera. Keys to the subgenera and species are given.

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INTRODUCTION

Homoneura van der Wulp (1891), the largest genus in the Lauxaniidae, is widely distributed and represented by diverse forms. It is the dominant group in the Oriental Region as well as in the Australasian and Ethiopian Regions (Stuckenberg, 1971; Shewell, 1977). In the Oriental Region it consists of 5 subgenera, *Chaetohomoneura* Malloch (1927), *Neohomoneura* Malloch (1927), *Minettioides* Malloch (1929), *Euhomoneura* Malloch (1927) and *Homoneura*. Up to the present, however, only 15 species have been recorded from Malaya (Singapore) and N. Borneo (Sabah and Sarawak) in fragmentary reports by Walker (1856), Kertész (1900) and Malloch (1929), and no general study has yet been made for the Malayan and N. Bornean faunae.

The present work was made with the intention of gaining a better perspective of the Malaysian Lauxaniidae on the basis of material accumulated in connection with the project "Systematic and Ecological Surveys on Some Plant-parasitic Microarthropods in Southeast Asia" and specimens I borrowed from the B.P. Bishop Museum, Hononulu, and the Natural History Museum of Hyôgo Prefecture, Sanda. Thus a total of 77 species is now known from Malaysia, exceeding 53 species known from the Philippines, 41 from Java, or 34 from Formosa. According to our present knowledge, the generic and specific diversity of the family is certainly great in islands, but not so much in the mainland, in the Oriental Region. However, more field research and taxonomic work are necessary in order to clarify the relationship between the island and mainland faunae.

ABBREVIATIONS AND TYPE DEPOSITORIES

1. Abbreviations for certain setae or bristles are as follows: *Head*: *oc* - ocellar, *oh* - orbital hairs, *or* - orbital, *pm* - peristomal, *pvt* - postvertical (postocellar); *thorax*: *acr* - acrostichal, *dc* - dorsocentral, *h* - humeral, *ia* - intra-alar, *ipa* - inner post-alar, *mp* - mesopleural, *opa* - outer post-alar, *prs* - presutural (posthumeral), *prsc* - prescutellar, *sa* - supra-alar, *sc* - scutellar, *sp* - sternopleural; *legs*: *a* - anterior, *av* - antero-ventral, *p* - posterior, *pd* - preapical, *pv* - postero-ventral.

Other abbreviations are: f_1 and t_1 - fore femur and tibia, f_2 and t_2 - mid femur and tibia, f_3 and t_3 - hind femur and tibia; T1-9 and S4-6 - lst to 9th abdominal tergites and 4th to 6th sternites.

2. Wing vein indices: C-index is obtained by dividing the length of the 2nd costal section (between apices of R_1 and R_{2+3}) by the length of the 3rd (between apices of R_{2+3} and R_{4+5}); 4V-index and 5V-index are obtained by dividing the length of ultimate section (between m-m and wing margin) of M_{1+2} by the penultimate (between both crossveins), and the ultimate section of M_{3+4} by the penultimate, respectively.

3. Collector's names are abbreviated to the initials: M.D. - M. Delfinado, K.F. - K.J. Frogner, J.G. - J.L. Gressitt, Y.H. - Y. Hirashima, K.K. - K.J. Kuncheria, T.M. - T.C. Maa, F.M. - F. Muir, L.Q. - L.W. Quate, M.S. - M. Sasakawa, J.S. - J. Sedlacek, A.T. - A. Tanaka.

4. Type depositories: The holotypes of new species collected by myself are deposited in the collection of the Forest Research Institute of Malaysia (FRIM), and

those based on specimens borrowed from the Bishop Museum (BISHOP) and Natural History Museum of Hyôgo Prefecture (HYÔGO) are preserved in the respective collections.

PHYLOGENETIC CONSIDERATIONS

Before considering the phylogenetic relationship of the subgenera and species, it is necessary to determine the plesiomorphic-apomorphic relation of character states. An attempt is made below to determine plesiomorphic states.

1. Color and wing pattern. Dark or unicolor body, including the face, parafacialia, antenna, palpus, mesonotum and abdomen, may be plesiomorphic. Wing patterns appear to form a simple morphocline starting from a hyaline wing, which may sometimes be very faintly bordered with brown around the outer crossvein m-m. At the next step the wing is very faintly grayish or yellowish, with brownish maculae. The markings typically consist of basal, submedian, median and apical ones. The basal marking is situated in the wing base proximad of about level of Rs, the submedian one at level of the inner crossvein r-m, the median one at level of m-m, and the apical one broadest and in the wing tip (on or just before apices of veins R_{2+3}, R_{4+5} and M_{1+2}). The dark anterior marking along costa is constructed by a fusion of the anterior parts of the 3 distal markings.

The genus *Drosomyia* de Meijere (1904) was established on the basis of its peculiar wing pattern: brown wing with many hyaline spots. It was synonymized with *Homoneura* by Stuckenberg (1971), while Shewell (1977) treated it as a valid subgenus of *Homoneura* in his catalogue of the Oriental species. One of the Japanese common species, *H. euaresta* (Coquillett, 1898), is also patterned the same. In my examination of male genitalia no definite characters to separate the subgenus are found. This wing pattern, therefore, may be a mere modification of the wing markings in the genus *Homoneura*.

2. Chaetation. Species of the subgenus *Euhomoneura* have a pair of presutural dorsocentrals in addition to postsutural pairs; species of subgenus *Chaetohomoneura* have 2 supra-alars, and those of subgenus *Minettioides* have a true intra-alar on or close to the line between the posteriormost dorsocentral and supra-alar; number of the acrostichal rows is variable from 2 to 12, while the presence of 10-12 dense rows, usual in subgenera *Chaetohomoneura* and *Neohomoneura*, may be plesiomorphic.

Other supposed plesiomorphic character states are as follows: long ocellars (subequal to or a little longer than the lower orbital), short-haired to plumose arista, and the presence of several strong bristles on the posterior surface of mid tibiae (in subgenera *Chaetohomoneura* and *Neohomoneura*), 4 spurs on the mid tibia (in *Chaetohomoneura*), and preapicals on all tibiae. Reduction in the number of these bristles (setae) or spurs occurs not only in species but also in subgenera.

3. Male genitalia. The protandrium is composed of 7th and 8th abdominal segments. A ring-like one (Figs. 2, 7, 8) may be plesiomorphic. It is usually provided with an apodeme, which is projected anteriorly on its dorsal side, and with a bridge connecting with both sides of ring at level of ventral one-third; sometimes also with a lobed or clubbed sclerite (=sternite), which differs in degree of sclerotization. On the other hand, a protandrium shaped like a horseshoe when viewed from

behind (Fig. 15, A_3), with the ventral portion completely lacking, may be apomorphic. In subgenus *Minettioides* the protandrium is ring-like, while in subgenus *Homoneura* it is usually horseshoe-shaped.

The surstylus is usually well developed in the Lauxaniidae. In some species it is separated from the epandrium by a suture (Fig. 20), and this state may be plesiomorphic. In other species it is indistinguishable, being fused to the postero-ventral margin of the epandrium (Fig. 13), or consists of 2 or more processes on either ventral side of epandrium (Fig. 36, A_1), and may be apomorphic.

The hypandrium is typically H-shaped in ventral view with basal and distal apodemes (sidepieces) developed on lateral sides. This state may be plesiomorphic and is common in *Chaetohomoneura* and *Neohomoneura*. Starting from this state, the hypandrial apodemes become short or rudimentary on either side to form a U or inverted U shape; then they are fused to form a single basal or distal apodeme, forming a Y or W shape; and their absence may be the most apomorphic.

The gonites typically consist of 2 pairs of praegonites and postgonites, extending posteriorly along the same plane as the aedeagus (Figs. 2, 4, 20). The praegonites are borne on both ends of distal apodemes of hypandrium, and the postgonites are attached to the base of lateral sclerites of aedeagus. These gonites vary in size and shape among the species. The presence of both gonites is consid-

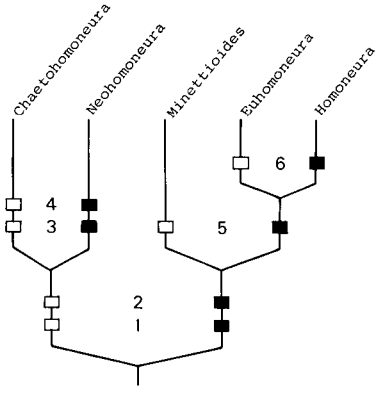

Fig. 1. Hypothetical phylogeny for the subgenus-groups and subgenus of *Homoneura*, based on the character states in Table 1. Open squares, plesiomorphic and solid squares, apomorphic character states.

Table 1. Character states used in Fig. 1.

Character	Plesiomorphic	Apomorphic
1. Posterior bristles on mid tibia	present	absent
2. Acrostichal setae	10-12 rows	less than 8 rows
3. Supra-alar bristles	2 pairs	1 pair
4. Spurs on mid tibia	4 spurs	3 spurs
5. Intra-alar bristle	present	absent
6. Dorsocentral bristles	1+2	0+3

ered plesiomorphic.

The aedeagus with smooth lateral sclerites may be plesiomorphic, while that with spinose or dentate lateral sclerites is probably apomorphic.

A cladogram (Fig. 1) is constructed to show the relationship among the Oriental subgenera. The first major dichotomy is the differentiation between the *Homoneura* and *Chaetohomoneura* groups of subgenera. Then the former is divided into the *Homoneura-Euhomoneura* subgroup and *Minettioides*. Subgenus *Homoneura*, characterized by an apomorphic character state or states at every dichotomy, is a good taxon and probably monophyletic.

KEY TO THE SUBGENERA OF HOMONEURA V.D. WULP

1. Mid tibia with a row of several strong bristles (*p*) on posterior surface. 2
- Mid tibia without differentiated *p*. 3
2. Mesonotum with 2 *sa*; mid tibia with 4 spurs. ..... *Chaetohomoneura* Malloch
- Mesonotum with 1 *sa*; mid tibia with 3 spurs. ..... *Neohomoneura* Malloch
3. Mesonotum with a distinct *ia*. ..... *Minettioides* Malloch
- Mesonotum without *ia*. 4
4. Mesonotum with 1+2 *dc*. ..... *Euhomoneura* Malloch
- Mesonotum with 0+3 *dc*. ..... *Homoneura* v. d. Wulp

SUBGENUS CHAETOHOMONEURA MALLOCH

Only two testaceous species, *aequata* (Walker) and *fuscicostata* (Walker), have been known from Sarawak, Borneo. The former is characterized by the black apical margin of scutellum and the latter by brown anterior margin of wing. Five more species are distributed in Malaya and N. Borneo.

Oriental species are divided into 2 groups: *obscuriceps*- and *semibrunnea*-group, by the chaetic characteristics of mid femora given in the key. Male genitalia with annular protandrium, H-shaped hypandrium and praegonite only are common to many species of this subgenus. Noticeable feature of protandrium is the development of sternite as a distinct subquadrate or subtriangular sclerite. Among the species of *semibrunnea*-group, *luteoscutellata* n. sp. is highly advanced in the horseshoe protandrium, Y-shaped hypandrium, the presence of both prae- and postgonites, and spinose aedeagus, and in the absence of surstylus.

Key to the species of subgenus *Chaetohomoneura*

1. Mid femur with a row of strong *pv*. 3
- Mid femur without strong *pv*. 2
2. Thorax largely testaceous, abdomen black except basal tergites; *ia* absent; wing with m-m very slightly clouded. ..... *obscuriceps* (de Meijere)
- Thorax and abdomen largely brownish black to black; *ia* long; wing clear; epandrium with an inwardly directed process at posterior base of surstylus. ..... *gedehi* (de Meijere)
3. Face and abdomen pale testaceous. 4
- Face and abdomen black. 5
4. Mesonotum with 0+3 *dc*; wing 7 mm long, with brown costal margin; T2-5 with posterior margins black; hypandrium H-shaped. ..... *fuscicostata* (Wakler)
- Mesonotum with 0+2 *dc*; wing about 5 mm long, immaculate; T1-4 (5) entirely testaceous yellow; hypandrium Y-shaped. ..... *semibrunnea* (de Meijere)

5. Scutellum dark brown; protandrium annular, surstylus angulated and directed inward, hypandrium H-shaped. ..... *angulata* n.sp.
- Scutellum testaceous yellow; protandrium horseshoe-shaped, surstylus absent, hypandrium Y-shaped. ..... *luteoscutellata* n. sp.

1. *Homoneura* (*Chaetohomoneura*) *angulata* n. sp.

Diagnosis. This large black species is recognizable by the pale testaceous antenna, 2 long *p* on t_2 and angulated surstylus. This species is closely related to the Philippine *umbrosa* Malloch (1929) and Sumatran *anthrax* Malloch (1927), but differs from *umbrosa* by its entirely black abdomen, and from *anthrax* by its long anterior *sa*.

Male. Head brown but occiput and postgena testaceous, face black, anterior margin of frontalia sometimes orangish; frons sparsely pruinose, face and parafacialia densely whitish pollinose; antenna pale testaceous, arista black except base; palpus brownish black. Thorax dark brown; mesonotum weakly shining, densely brownish-gray dusted, usually with anterior margin and humerus, and lateral sides sometimes pale testaceous; wing tinged with yellowish brown; calypter with fringe brownish yellow; halter testaceous yellow, sometimes knob darkened; legs dark brown to black, tarsi testaceous. Abdomen black, densely brownish-gray dusted.

Frons as wide as or slightly wider than long, a little wider than eye, slightly diverging ventrally; *or* subequal to each other in length; *oc* slightly shorter than *or*; *oh* 2-3; eye slightly higher than broad; gena 1/7-1/9 height of eye; face flat; *pm* 10, very short; antennal segment 3 twice as long as wide, slightly narrowing apically; arista plumose, with dorsal hairs subequal to ventral ones in length and longest hair 1.3 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, lst *dc* situated as far apart from suture as from the 2nd, 10-12 rows of *acr*, *prsc* longer than lst *dc*, *ipa* slightly shorter than *opa*, anterior *sa* 2/3 length of posterior, usually posteriormost *ia* longer than others and 1/3 length of 3rd *dc*; C-index 4-4.4, r-m before middle of discal cell, 4V-index 1.3, 5V-index 0.13-0.17; f_1 with 5 *pv*, f_2 with 5-7 *a* and 5-6 *pv*, t_2 with 2 strong *p* at middle and distal quarter, sometimes accompanying with 1 or 2 short ones basally, and 3 long and 1 short spurs; hind tibial *pd* subequal to that on t_1.

Protandrium ringed, slightly constricted on ventral 1/4, with dorsal apodeme short and ventral bridge complete or obscure on both ends; S4-5 quadrate, each 1.5 times as wide as long, S6 1.7-2 times as wide as long and excavated at middle of posterior 1/2. Epandrium (Fig. 2) with surstylus more or less angulated at middle and then directed inward; hypandrium H-shaped, with basal apodemes broader than the distal; praegonite excavated at middle of inner side, with 2 short setae at base, postgonite absent; aedeagus with lateral sclerites well-developed; aedeagal apodeme 2/3 length of aedeagus; ejaculatory apodeme 70 μm long.

Body length 5.7-7.5 (holotype) mm, wing length 5.1-6.5, 6.2 (holotype) mm.

Female. Similar to male, but smaller than males: 5.0-6.8 mm in body length.

Holotype ♂, Bundu Tuhan, Sabah, Borneo, 18. II. 1959 (T.M.) (BISHOP 15062). Paratypes: MALAYA: 1♀, Gua Che Yatin to Terengganu, Pahang, 17. XII. 1958 (L.Q.). SABAH: 3♂3♀, same data as holotype; 1♂3♀, Sepilok Forest Reserve,

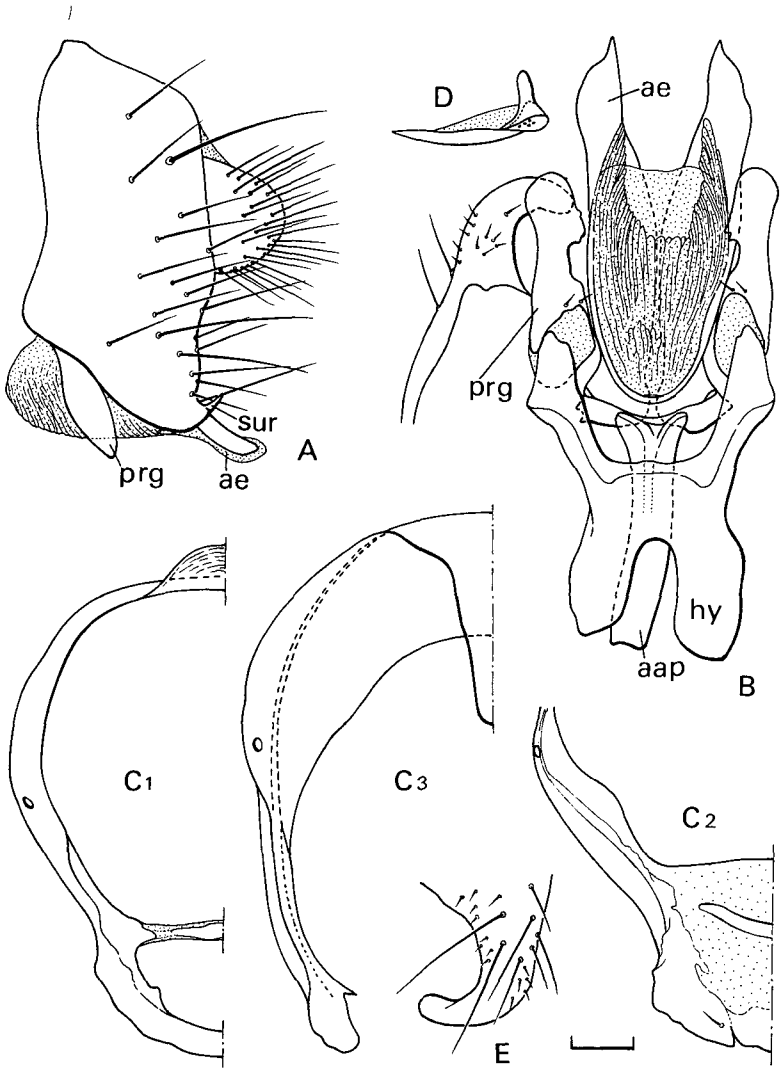

Fig. 2. Male genitalia of *Homoneura* (*Chaetohomoneura*) *angulata* n. sp.
A, epandrium, lateral view; B, hypandrium, gonites and aedeagus, ventral view; C, protandrium, anterior view; D, ejaculatory apodeme; E, surstylus, posterior view. C_1: *H. angulata*, C_2: *H. fuscicostata*, C_3: *H. luteoscutellata*. Scale 0.1 mm.
aap, aedeagal apodeme; ae, aedeagus; hy, hypandrium; prg, praegonite; sur, surstylus.

28-31. X. 1957 (J.G.) and 7. X. 1988 (M.S.); 1♀, Primary Forest, Kalabakan, 10. XI. 1958 (T.M.); ♀, Gomantong Caves, 20 mil. S. of Sandakan, 22-26. XI. 1958 (T.M.); 2♂1♀, Tenompok, 1,460 m, 30 mil. E. of Jesselton (Kota Kinabalu), 26-30. I. & 2-4. II. 1959 (T.M.); 1♂1♀, Keningau, 12-17. I. 1959 (T.M.). SARAWAK: 1♂1♀, Bidi, 90-240 m, Bau District, 3. IX. 1958 (T.M.); 3♂6♀, Pengkalan Tebang, 300-450 m, Bau, 5. IX. 1958 (T.M.).

Distribution. Malaya and Borneo (Sabah, Sarawak).

2. *Homoneura* (*Chaetohom.*) *fuscicostata* (Walker)

Helomyza fuscicostata Walker, 1856 : 129.

This pale testaceous species is characterized by the brown anterior and apical margins of wing (from apex of R_1 to beyond apex of M_{1+2} and from costa to middle of cell R_3). Other main characters are as follows: T2-5 with black posterior margins and T6 entirely brown; both *or* and *oc* subequal to each other; dorsal longest hair of arista as long as width of antennal segment 3; anterior *sa* 4/5 of the posterior; wing 7 mm long, C-index 4.3, 4V-index 1.5; f_2 with 1-3 *pv*, t_2 with 3 *p*. Protandrium ringed, with ventral part including bridge scarcely sclerotized (Fig. 2,

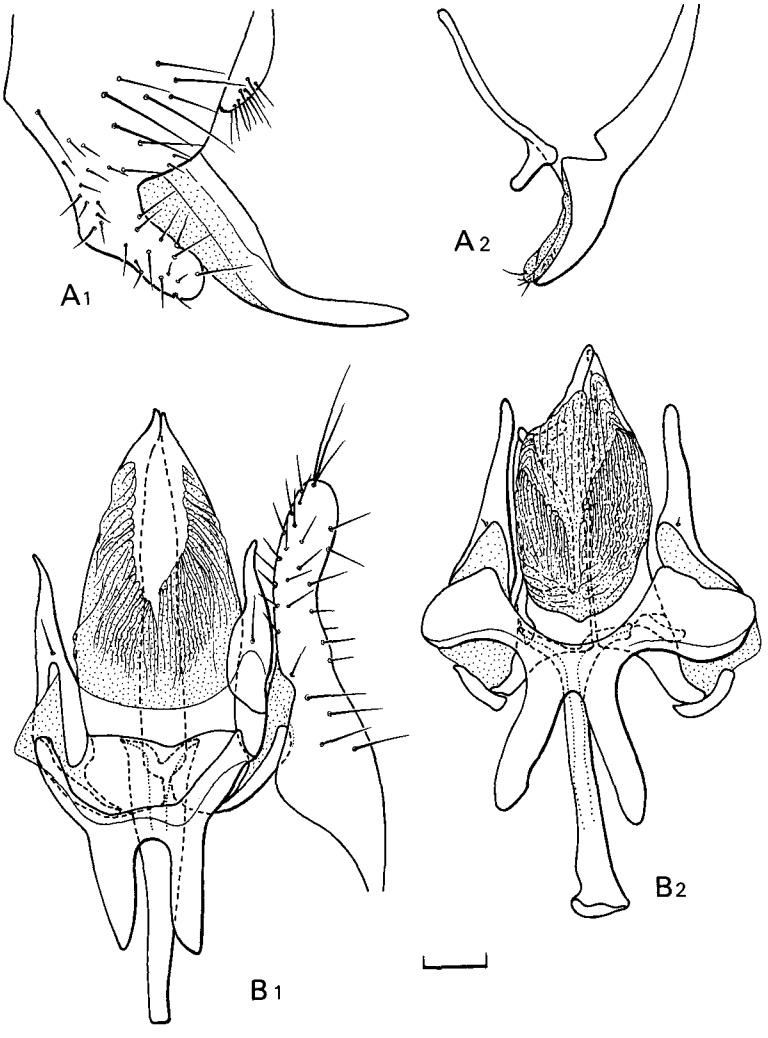

Fig. 3. *Homoneura* (*Chaetohomoneura*) *fuscicostata* (Walker)-A_1, B_1; *H.* (*C.*) *gedehi* (de Meijere)-A_2, surstylus, ventral view; B_2. Abbreviation: see Fig. 2.

C_2); S4-6 each about 1.5 times as wide as long; surstylus distinctly projected, hypandrium H-shaped (Fig. 3), with distal apodemes divergent; praegonite narrowed apically, with a seta near ventral base; aedeagal apodeme shorter than aedeagus; ejaculatory apodeme 220 μm long.

Specimen examined. 1♂, Mt. Kinabalu, Kamabaranga, Sabah, 20-30. X. 1958 (L.Q.).

Distribution. Borneo (Sabah, Sarawak).

3. *Homoneura* (*Chaetohom.*) *gedehi* (de Meijere)

Lauxania gedehi de Meijere, 1914: 231.

This blackish species is distinctive in having long *ia*, as in the species of subgenus *Minettioides*, and a pair of inwardly directed cylindric processes near inner bases of surstyli.

Protandrium annular, with a pair of setae just laterad of spiracles, ventral sclerite subtriangular; S4-6 each about thrice as wide as long, S5 broadest; surstylus (Fig. 3) projected on posteroventral corner, incurved apically, accompanied by a membranous and setulose lobe on its inner side and an inwardly directed short process at base; hypandrium H-shaped but distal apodeme expanded laterally; aedeagus slightly longer than aedeagal apodeme, ejaculatory apodeme 140 μm long.

Chaetic characters: Longest hair of arista 1.5 times as long as width of antennal segment 3; *ia* 1/2 to subequal to 2nd *dc*; anterior *sa* 1/2 of the posterior; t_2 with 3-4 *p*.

Specimens examined. SABAH: 1♂3♀, Forest Camp, 19 km N. of Kalabakan, 13-14. XI. 1962 (K.K.); 1♀, Kamabaranga-Tenompok, 2. XI. 1958 (T.M.).

Distribution. Java, Borneo (Sabah), Philippines. New to Borneo.

4. *Homoneura* (*Chaetohom.*) *luteoscutellata* n. sp.

Diagnosis. This fuscous species is unique by the testaceous yellow scutellum, spinose aedeagus and the presence of 2 pairs of gonites.

Female. Head with frontalia, occiput and antenna pale brown, face and palpus black; frontalia sparsely pruinose, face and parafacialia withish gray dusted; thorax blackish brown, grayish pollinose; mesonotum weakly shining, with anterior margin including humeri and posterolateral corners testaceous, and lateral sides more or less brown-tinged, both *pa* growing on pale area; scutellum and postnotum testaceous yellow; posterior pleura (caudad of mesopleural suture) and pleurotergites testaceous; abdomen weakly shining black, grayish pollinose. Wing tinged with brownish yellow, without distinct clouds; calypter and fringe yellowish; halter testaceous yellow. Legs blackish brown, tibiae and tarsi more or less paler.

Frons as wide as long, and as wide as eye, slightly diverging ventrally; lower *or* slightly shorter than the upper; *oc* slightly shorter than lower *or*; *oh* 4-5; eye a little higher than broad, bare; face flat; gena 1/12 height of eye; *pm* 6-8, short; antennal segment 3 twice as long as wide, gradually narrowing apically; arista plumose, with dorsal longest hair slightly longer than width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* 2/3 of 3rd, 10-12 rows of *acr*, *prsc* as long as

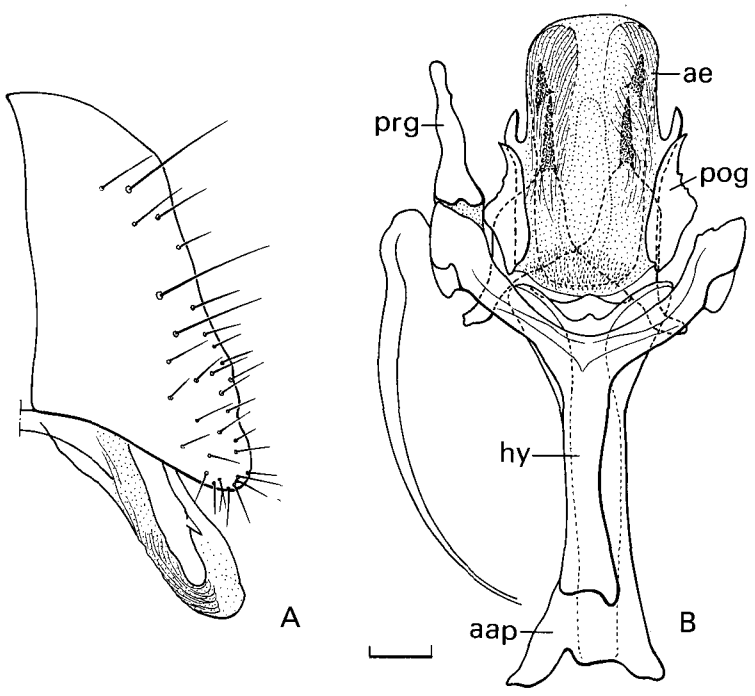

Fig. 4. *Homoneura* (*Chaetohomoneura*) *luteoscutellata* n. sp. pog, postgonite. See Fig. 2.

2nd *dc*, both *pa* subequal, anterior *sa* slightly shorter than the posterior, *ia* indistinct. Wing with C-index 4.2, r-m before middle of discal cell, 4V-index 1.1-1.3, 5V-index 0.15-0.16; f_1 with about 6 *pv*, f_2 with 6 *a* and 4-5 *pv*, t_2 with 2 *p* (sometimes accompanying with 1 or 2 short ones), and 3 long and 1 short spurs, hind tibial *pd* slightly longer than that on t_1.

Body length 6.5 mm, wing length 5-6.2 (holotype) mm.

Male. Paler than female: mesonotum with anterior, lateral (including notopleuron) and posterior (behind level of 2nd *dc*) margins testaceous yellow; *prs*, *sa*, *pa*, posterior *dc* and *prsc* growing on pale area; posterior half of pleura also pale testaceous, *mp* and *sp* on pale area; tibiae and tarsi testaceous; anterior *sa* 1/2 of the posterior. Protandrium (Fig. 2) horseshoe-shaped but well extended ventrally, with dorsal apodeme longer than its tergal length; S4-6 each about 1.7 times as wide as long; epandrium (Fig. 4) rounded on ventral part, without surstylus; hypandrium Y-shaped, prae- and postgonites each small; aedeagus with 3 pairs of spinous processes on dorsal and lateral sides; aedeagal apodeme slightly longer than aedeagus.

Holotype ♀, Forest Camp, 19 km N. of Kalabakan, Sabah, Borneo, 18. X. 1962 (Y.H.) (BISHOP 15063). Paratypes 1♂2♀, same locality as holotype, 30 X. 1962 (Y.H.) and 13-14. XI. 1962 (K.K.).

Distribution. Borneo (Sabah).

5. *Homoneura* (*Chaetohom.*) *obscuriceps* (de Meijere)

Lauxania obscuriceps de Meijere, 1924 : 50.

Testaceous species with shiny black abdomen excepting T1 almost entirely and

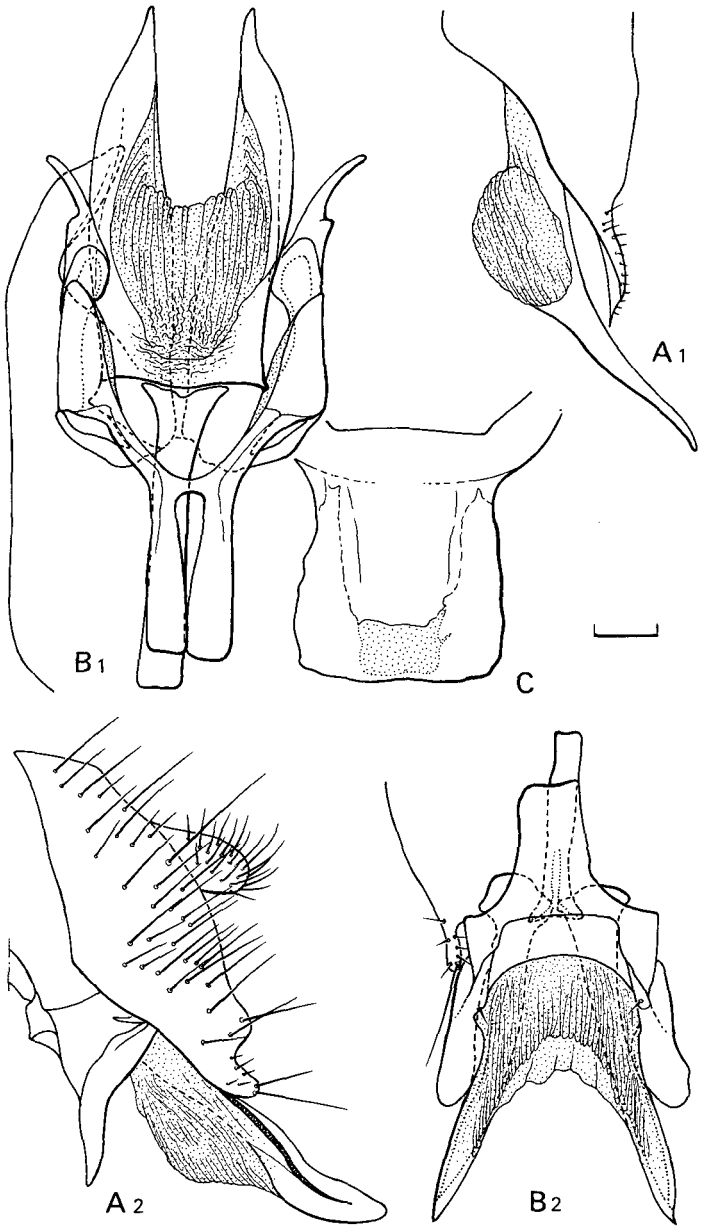

Fig. 5. *Homoneura* (*Chaetohomoneura*) *obscuriceps* (de Meijere)-A_1, B_1, C, ventral plate of protandrium ; *H.* (*C.*) *semibrunnea* (de Meij.)-A_2, B_2.

T2 laterally testaceous, and hair-like mid femoral *pv*. Wings are more luteous and S4-6 broader (S4 2, S5 2.7 and S6 3 times as wide as long) than those of *angulata*. Protandrium with ventral sclerite subquadrate, about 1/2 as wide as greatest length of tergite; surstylus (Fig. 5) distinctly projected ventrally, slightly incurved apically, praegonite distinctly narrowed apically and without setae, differing from those of *angulata*.

Specimens examined. MALAYA: 1♂, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.); 1♀, Tanah Rata, Cameron Highlands, 29. VIII. 1986 (M.S.).

Distribution. Sumatra, Malaya. New to Malaya.

6. *Homoneura* (*Chaetohom.*) *semibrunnea* (de Meijere)

Lauxania semibrunnea de Meijere, 1915: 91.

This brownish species is characterized by having 0+2 *dc*, testaceous yellow T1-4 (5) and divergent lateral sclerites of aedeagus. Other main characters are as follows: frontalia with anterior margin yellowish; antenna, gena and back of head testacous yellow; mesonotum with anterior margin including humeri yellowish brown and lateral sides pale brown; wings 4.5-5.5 mm long; f_1 with 7 *pv*, f_2 with 5-6 *a* and 5-7 *pv*, t_2 with 2 *p*, and 3 long and 1 short spurs. Protandrium ringed, with dorsal apodeme shorter than length of tergite and ventral bridge well developed; epandrium (Fig. 5) densely setose; surstylus small, with 2 long apical setae; hypandrium Y-shaped, praegonite with a minute seta near base, postgonite absent; aedeagal apodeme distinctly shorter than aedeagus.

Specimens examined. SABAH: 1♂1♀, Sepilok Forest Reserve, 26. X. 1957 (J.G.). SARAWAK: 1♀, Gunong Matang (120 m), 12. IX. 1958 (J.G. & T.M.).

Distribution. Sumatra, Borneo (Sabah, Sarawak). New to Borneo.

Subgenus Neohomoneura Malloch

Two species, *albicosta* Malloch (1929) and *limbata* (Walker, 1856), have been known from Malaya and N. Borneo. Three species are added to the fauna. Wings of *albicosta* is characteristic, that is, white on anterior 1/2 and brown on posterior. The 2nd costal section is very long (3.9-5.0 times as long as the 3rd) as in the species of *Chaetohomoneura*. Annular protandrium is provided with ventral bridge excepting that of *intereuns* (Walker); postgonites are developed only in *honesta* (Kertész) and *limbata*.

Key to the species of subgenus *Neohomoneura*

1. Wing with conspicuous brown markings; *oc* long. 2
- Wing yellowish hyaline; *oc* minute; body yellow to pale tawny, mesonotum and abdominal tergites with black median vittae. ..... *limbata* (Walker)
2. Wing with brown markings confined to apices of R_{2+3}, R_{4+5} and M_{1+2}. 3
- Wing browned along costa from apex of R_1 to wing tip (beyond apex of M_{1+2}). ..... *orientalis* (Wiedemann)
3. Apical marking on R_{4+5} with basal extremity at same level of that on R_{2+3}; T4-6 each with a brown round spot at middle. ..... *honesta* (Kertész)

- Apical markings becoming gradually shorter from R_{2+3} to M_{1+2}; abdomen largely dark brown. ..... *intereuns* (Walker)

7. *Homoneura* (*Neohomoneura*) *honesta* (Kertész)

Lauxania (*Minettia*) *honesta* Kertész, 1915: 532.

Testaceous yellow; wing (5.0-5.2 mm long) with apical clouds confined to apices of R_{2+3}, R_{4+5} and M_{1+2}, and with band over m-m.

Protandrium ringed but narrowly separated on ventromedian line, with bridge

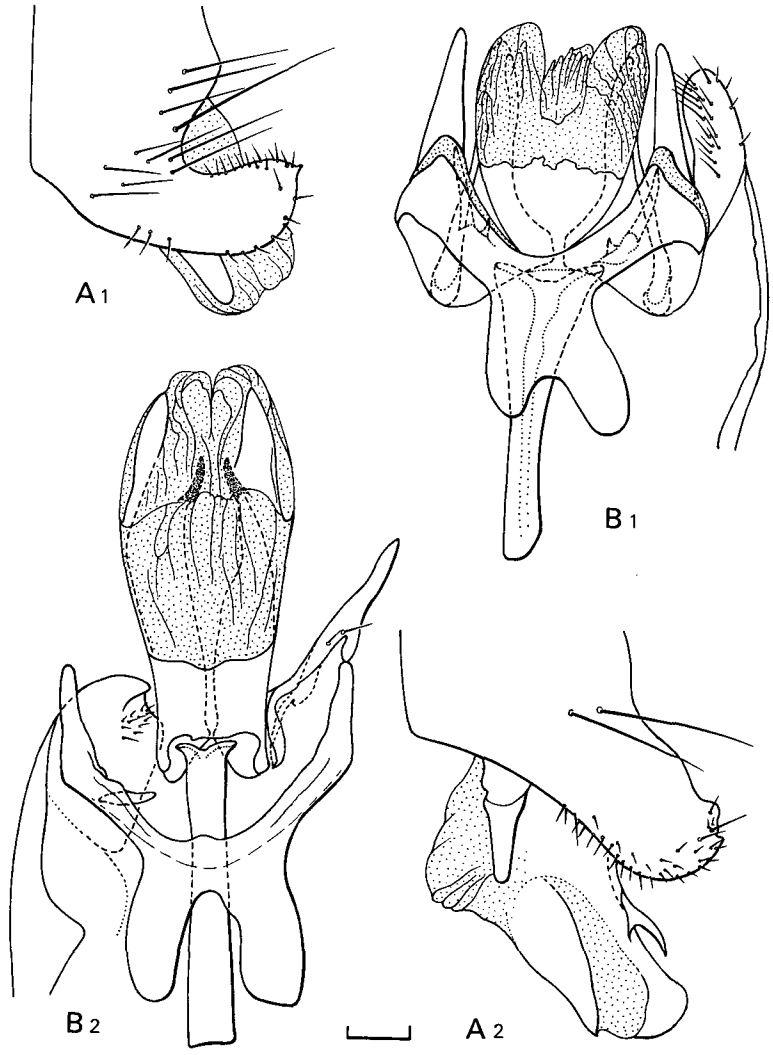

Fig. 6. *Homoneura* (*Neohomoneura*) *honesta* (Kertész)-A_1, B_1; *H.* (*N.*) *intereuns* (Walker)-A_2, B_2. See Fig. 2.

ventrally (Fig. 8, C_2); S4-6 each as wide as long; epandrium (Fig. 6) with surstylus well projected posteriorly, minutely papillate on dorsal tip; hypandrium H-shaped but basal apodemes broadly united and distal ones divergent posteriorly; praegonite long, postgonite slender and accompanied by a spine-like process near base; aedeagus dorsally with a pair of teeth before apex, subequal to aedeagal apodeme in length; ejaculatory apodeme 80 μm long.

Remarks. Malloch (1929) adopted the absence of microscopic hairs in the center of propleuron in distinguishing this species from *intereuns*. But in *honesta* pale brown microscopic setulae are found along the posterior margin of propleuron. Apical marking on R_{4+5} is variable in size, that is, its basal extremity is situated on, a little before or behind level of basal extremity of marking on R_{2+3}.

Specimens examined. MALAYA: 1♂1♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-14. & 12-15. XII. 1958 (J.G. & T.M.); 1♂, Kuala Tahan, 12-14. XII. 1958 (L.Q.); 1♂, Kepong (130-300 m), Selangor, 13-21. III. 1966, at light (J.S.).

Distribution. Formosa, Thailand, Malaya. New to Malaya.

8. *Homoneura* (*Neohom.*) *intereuns* (Walker)

Helomyza intereuns Walker, 1856: 28.
Homoneura (*Neohom.*) *jacobsoni* Malloch, 1927: 108.

This brownish yellow species is similar to *honesta* in the wing pattern. Wings 5-6.5 mm in length; apical markings on R_{2+3}, R_{4+5} and M_{1+2} separated narrowly from each other or fused into a single marking, becoming progressively shorter posteriorly: marking on R_{2+3} 1/2 length of vein, that on R_{4+5} 3/5 of ultimate section of vein and that on M_{1+2} 2/3 of ultimate section of vein; all these markings larger than those of a female described by Malloch (1927).

Abdomen dark brown excepting T1, anterior part of T2, anterolateral sides of T3-4 (6) and epandrium testaceous; S4-6 each about 1.3 times as wide as long; protandrium ringed but not united completely ventrally and without bridge; surstylus (Fig. 6) broad, with a blunt tooth on ventral tip and accompanied by a clavate and inwardly directed process at inner base; hypandrium H-shaped but distal apodemes divergent posteriorly, praegonite with 2 setae; aedeagus with a pair of claw-like processes on dorsal side and ventrally with a pair of sclerites pointed distally; aedeagal apodeme shorter than aedeagus; ejaculatory apodeme 60 μm long.

Specimens examined. MALAYA: 1♀, FRIM, Kepong, Selangor, 12. III. 1958, at light (J.S.); 1♂, Kuala Tahan, Pahang, 12. XII. 1958, primary forest (T.M.); 1♂, Penang, 12-14. I. 1959 (L.Q.). SABAH: 1♂1♀, Primary forest, Kalabakan, 15. XI. 1958 (T.M.); 4♂4♀, Gomantong Caves, 20 mil. S. of Sandakan, 22-26. XI. 1958 (T.M.); 1♀, Keningau, 12-17. I. 1959 (T.M.); 1♀, Kampong Moyog, nr. Kota Kinabalu, 27. IX. 1988 (M.S.); 1♀, Forest Reserve, Sepilok, 6. X. 1988 (M.S.); 2♀, Forest Camp, 19 km N. of Kalabakan, 12. X. & 4. XI. 1962 (K.K.). SARAWAK: 1♂5♀, Primary Forest, Pengkalan Tebang (300-450 m), Bau District, 6. IX. 1958 (T.M.).

Distribution. Sumatra, Malaya, Borneo. New to Malaya and Borneo.

9. *Homoneura* (*Neohom.*) *limbata* (Walker)

Helomyza limbata Walker, 1856 : 130.

This yellowish species is distinct in the *oc* minute, *or* extremely long, and mesonotum and abdomen black-vittate. Median vitta on mesonotum dusted with gray, narrowed before level of lst *dc* (about 1/4 width of posterior vitta) but posteriorly extended to bases of 2nd-3rd *dc* and to scutellum excepting margin (both *sc* on yellow area) ; median longitudinal vitta on T2 (♀) or 3 (♂)-6 shining ; wing 4-4.2 mm long, hyaline, faintly tinged with yellow ; t_2 with 5-7 *p* ; S5-6 each slightly wider than long, S6 with a pair of long bristles at middle of posterior margin.

Protandrium (Fig. 7) ringed, with ventral bridge interrupted at middle ; surstylus extremely elongated ventrally, densely setose on anteroproximal lobe ; hypandrium U-shaped, praegonite consisting of 2 lobes, postgonite slightly longer than praegonite, narrowed distally, ventrally with a sharply pointed and outwardly directed process at base ; aedeagus with ventral sclerite in addition to lateral ones, distinctly longer than aedeagal apodeme, ejaculatory apodeme 130 μm long.

Specimens examined. SINGAPORE : 2♂1♀, Forest Reserve (20 m), Nee Sung,

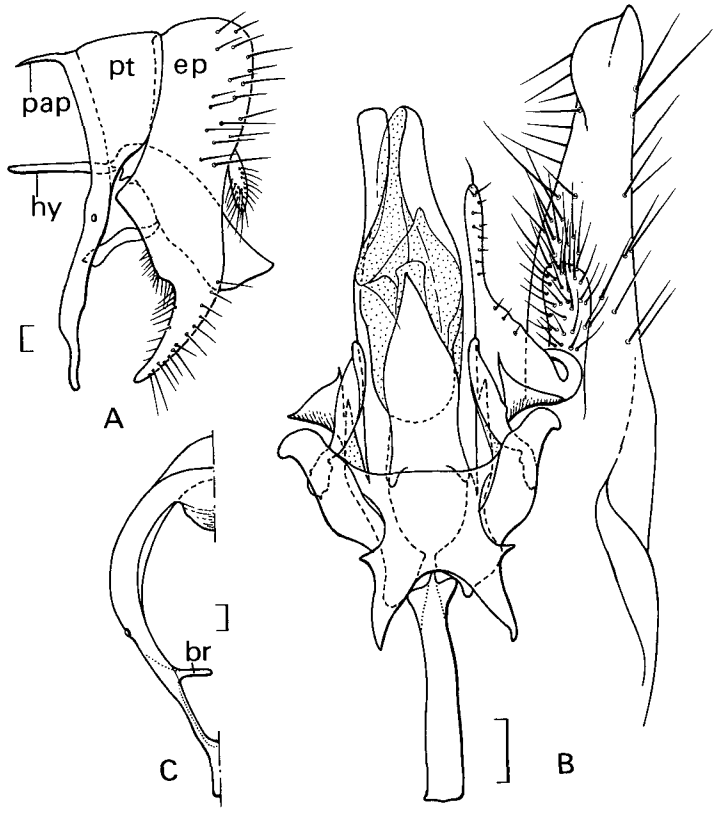

Fig. 7. *Homoneura* (*Neohomoneura*) *limbata* (Walker)-A, B, C, right half of protandrium. br, protandrial bridge ; ep, epandrium ; pap, protandrial apodeme ; pt, protandrium.

7. XII. 1958 (T.M.); 2♀, Botanical Garden, 10. XII. 1958 (T.M.).
Distribution. Malaya, Borneo, Sumatra.

10. *Homoneura* (*Neohom.*) *orientalis* (Wiedemann)

Sciomyza orientalis Wiedemann, 1830 : 575.

This is the type-species of subgenus *Neohomoneura* Malloch (1927), and distinguishable from *honesta* and *intereuns* in the wing and abdominal patterns: dark cloud on apex of R_{2+3}, which begins a little before level of r-m, is about 4/5 as wide

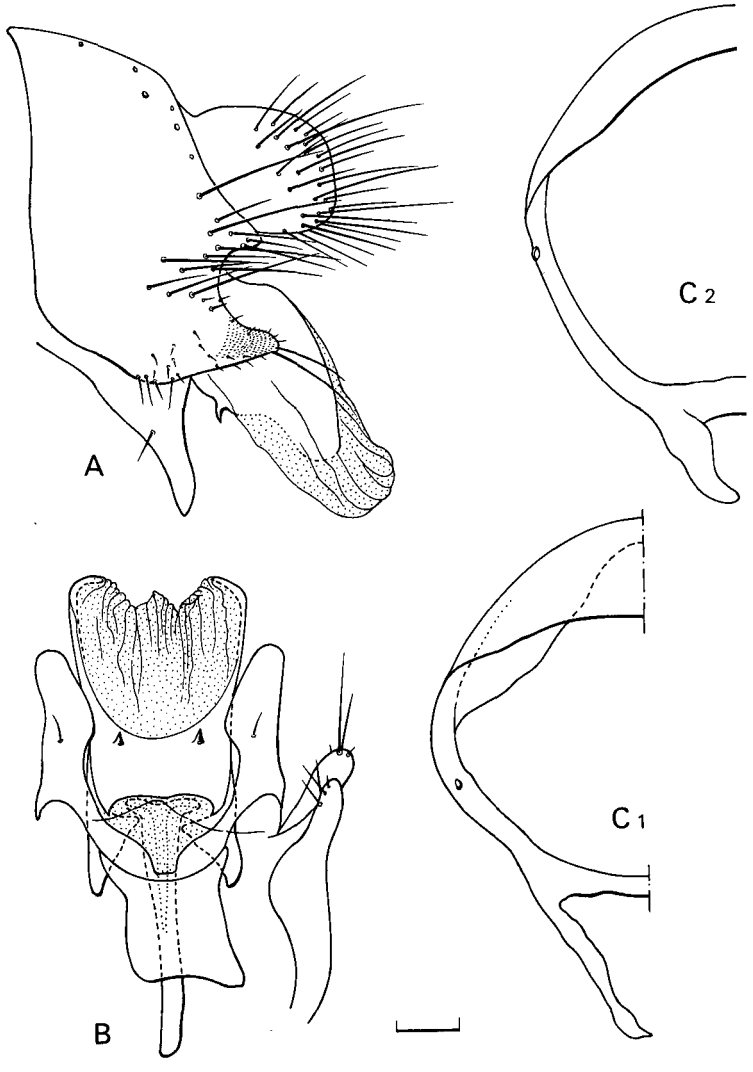

Fig. 8. *Homoneura* (*Neohomoneura*) *orientalis* (Wiedemann)-A, B, C_1; *H.* (*N.*) *honesta*-C_2, right half of protandrium.

as length of vein and is connected with anterior dark marking of cell R_1 which extends over apices of Sc and R_1 ; T2-4 are narrowly and T5 broadly black along posterior margins, T4 narrowly and T5 broadly black longitudinally (somewhat T-shaped) at middle, T6-epandrium entirely black.

Wing 6-6.9 mm long ; t_2 with 5-6 *p* ; S4 as long as wide, S5-6 each about 1.6 times as long as wide. Protandrium (Fig. 8) annular but scarcely united on ventral side, with ventral bridge complete ; epandrium with an excavation above surstylus which is provided with 2 long apical setae and microscopic spinulae on dorsodistal part ; hypandrium subquadrate ; praegonite large, with a seta at middle of ventral side, postgonite absent ; aedeagus short but broad, membranous on apex, with a pair of small teeth on ventral sclerite, a little longer than aedeagal apodeme.

Specimens examined. MALAYA : 1♂, Kuala Tahan, Pahang, 12. XII. 1958 (T.M.) ; 1♂, Taman (5 m), Pahang, 18. IX. 1960 (J.G.) ; 1♂1♀, Ulu Langat (300-390 m), Selangor, 13. VI. 1958 (T.M.) ; 1♂1♀, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.) ; 1♀, FRIM, Kepong, Selangor, 23-25. IX. 1990 (M.S.). SABAH : 2♂, Sepilok Forest Reserve, 29. X. 1957 (J.G.) ; 1♀, same locality, 6. X. 1988 (M.S.) ; 1♂, 8 mil. N. of Poring Hot Springs, Ranau, 8. X. 1958 (T.M.) ; 2♂2♀, Gomantong Caves, 20 mil. S. of Sandakan, 22-26. XI. 1958 (T.M.) ; 1♂, Tenompok (1,460 m), Jesselton, 26. I. 1959 (T.M.) ; 4♂4♀, Bundu Tuhan, 18. II. 1959 (T.M.) ; 3♂7♀, Keningau, 12-17. I. 1959 (T.M.) ; 2♂4♀, Liawan, 14-17. I. 1959 (T.M.) ; 1♀, Mt. Kinabalu Nat'l Park, 1. X. 1988 (M.S.) ; 1♂, Forest Camp, 19 km N. of Kalabakan, 9. XI. 1962 (K.K.). SARAWAK : 1♀, Santubong, Kuching, 26. VI. 1958 (T.M.) ; 1♂, Kampong Tapuh (300-450 m), Sadong, 16. VII. 1958 (T.M.) ; 1♂, Pengkalan Tebang (300-450 m), Bau District, 5. IX. 1958 (T.M.).

Distribution. Java, Sumatra, Borneo, Malaya. New to Malaya and Borneo (Sabah, Sarawak).

Subgenus Minettioides Malloch

H. orientis (Hendel) is recorded from Malaya and Borneo for the first time, and two new species, *borneoensis* and *sexmaculata*, are described. Although they are apomorphic in the shape of protandrium, *brorneoensis* is primitive in having the 7th sternite and 2 pairs of surstyli, while the other two are derivative in the surstylus undeveloped and the hypandrium ill developed.

Key to the species of subgenus *Minettioides*

1. Wing hyaline or faintly yellowish-tinged ; surstylus undeveloped. 2
- Wing maculated along anterior margin, on tip and around m-m ; surstylus well developed. ..... *borneoensis* n. sp.
2. T5 with a pair of black spots ; prae- and postgonites developed. ..... *orientis* (Hendel)
- T4-6 each with a pair of blackish brown spots ; gonites absent. ..... *sexmaculata* n. sp.

11. *Homoneura* (*Minettioides*) *borneoensis* n. sp.

Diagnosis. This new species is characterized by the size, wing and abdominal patterns, and male genitalia which are composed of 2 pairs of surstyli and asym-

metrical narrow sclerites of aedeagus.

Discussion. This species is related to *H. fumipennis* Malloch (1927), known from Formosa, in the wing pattern, but is distinguishable by its isolated markings on apices of R_{4+5} and M_{1+2}, and around m-m, minutely pubesent arista, unicolorous mesonotum and 3 spurs on t_2.

Male. Testaceous yollow; head whitish pruinose, ocellar triangle not darkened; antennal segment 3 more or less brownish on apical 1/2, arista black except base brown; palpus testaceous yellow. Mesonotum densely whitish dusted, without vittae. Wing hyaline, tinged with brownish yellow anteriorly, and with brown markings: on apex of cell Sc, around distal 7/8 of R_{2+3}, extending anteriorly to costa but not connected with spot in cell Sc and to posteriorly only 1/3 width of cell R_3, on apices of R_{4+5} (1/5-1/6 length of ultimate section of its vein) and M_{1+2} (about 1/3 ultimate section of its vein) which are united with each other, and over m-m; calypter with fringe yellowish brown; halter testaceous yellow. Legs yellow, distal 2 or 3 tarsal segments slightly infuscated. Abdomen sparsely dusted, shining, T4-6 each with a brown median longitudinal stripe which is triangulate on T5-6 and not extended to anterior margin, T5-6 with posterior margins linearly brown.

Frons slightly longer than wide (20 : 17), almost as wide as eye, parallel-sided; *oc* about 1/2 of lower *or* which is slightly shorter than the upper; *oh* and sparse setulae on frontalia ventrad of upper *or*-lines reclinate; eye higher than broad (3 : 2.5), bare; face flat; gena nearly 1/10 height of eye; *pm* 7, short. Antennal segment 3 1.5 times as long as wide, narrowing apically; arista thrice as long as segment 3, minutely pubescent, with longest hair about 1/6 width of segment 3.

Mesonotum with 0+3 *dc*, equidistant among them, 8 rows of *acr*, *prsc* as long as 2nd *dc*, postsutural *ia* 1/3 length of 3rd *dc* but distinctly longer than presutural

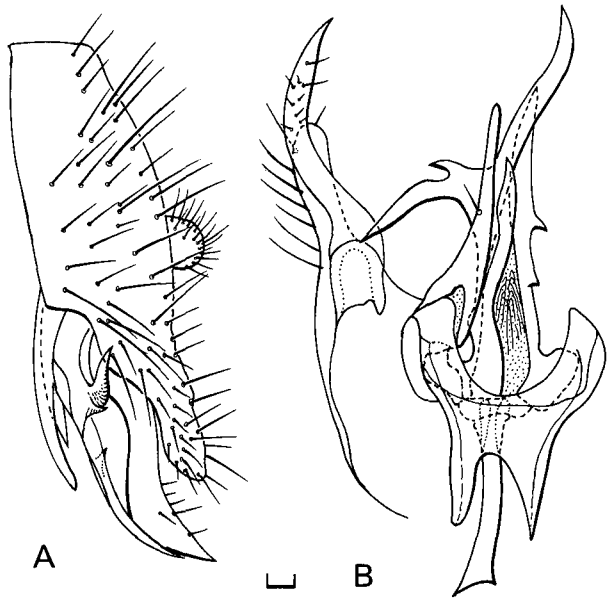

Fig. 9. *Homoneura* (*Minettioides*) *borneoensis* n. sp.

one, *ipa* subequal to *opa*; C-index 3.8, r-m before middle of discal cell, ultimate section of M_{1+2} only a little longer than penultimate, 5V-index 0.13; f_1 with 3-4 *pv*, f_2 with 5 *a*, t_2 with 3 spurs, all tibiae with *pd*.

Protandrium horseshoe-shaped, with apodeme dorsally; S5-6 each nearly twice as wide as long, S6 deeply excavated at middle of posterior margin; S7 minute, about 1/8 width of S6; epandrium (Fig. 9) densely setose, surstylus consisted of 2 processes, anterior one longer than the posterior and sharply pointed on tip; hypandrium H-shaped, praegonite with a seta at middle, postgonite subequal to praegonite in length, more sharply pointed on tip; aedeagus with lateral sclerites narrow, of which left one with distinct processes but the right with minute ones; aedeagal apodeme about 1/2 of aedeagus.

Body length 4.5-7.0 (holotype) mm, wing length 4.5-6.6, 6.0 (holotype) mm.

Female. Similar to male but T7 also with median stripe; marking around R_{2+3} rarely separated linearly from costa.

Holotype ♂, Mt. Kinabalu (2,140 m), Kambaranga, Sabah, Borneo, 22-30. X. 1958 (T.M.) (BISHOP 15066); in copulation with female on same pin. Paratypes: 1♀, same data as holotype; 1♂2♀, Tenompok (1,460 m), 30 mil. E. of Jesselton (Kota Kinabalu), Sabah, 17-21. X. 1958 & 26-31. I. 1959 (T.M.)

Distribution. Borneo (Sabah).

12. *Homoneura* (*Minet.*) *orientis* (Hendel)

Sapromyza orientis Hendel, 1908: 42 (n. name for *orientalis* Kertész, 1900).

This testaceous yellow species is distinct in having the frons narrow, wing clear and 2.8-3.2 mm long, and T5 with a pair of large black spots before posterior margin. Hypandrium H-shaped but pentagonoid at middle of bridge; praegonite cylindroid, with a seta on tip; postgonite large, broadened at base, longer than aedeagus (Fig. 10).

Specimens examined. MALAYA: 3♂, Port Dickson, Negeri Sembilan, 14-17. VIII. 1986 (M.S.); 1♀, Kuala Lumpur, 24-31. XII. 1958 (L.Q.); 2♂, Kuala Tahan, Pahang, 15-16. XII. 1958 (L.Q.). SABAH: 1♂1♀, Sandakan, 10. X. 1988 (M.S.).

Distribution. Java, Flores Is., Lombok, Borneo, Malaya; New Guinea, Solomon Is. New to Malaya and Borneo (Sabah).

13. *Homoneura* (*Minet.*) *sexmaculata* n. sp.

Diagnosis. This new species has short-haired aristae and 3 pairs of black spots on T4-6. It differs from *orientis* and the Samoan *apiseriata* Malloch (1929) in the number of black spots on T and the structure of male genitalia.

Male. Yellow, slightly tinged with brown; head and thorax sparsely pruinose; arista brown except base yellow; mesonotum subshining; wing faintly brownish yellow tinged, calypter with fringe pale brown; halter yellow; coxae and femora pale yellow; T4-6 each with a pair of blackish brown, circular spots before posterior margin, those on T4 pale.

Frons slightly narrower than long, and than width of eye, almost parallel-sided; lower *or* slightly shorter than the upper; *oc* short, 1/2 length of lower *or*; face

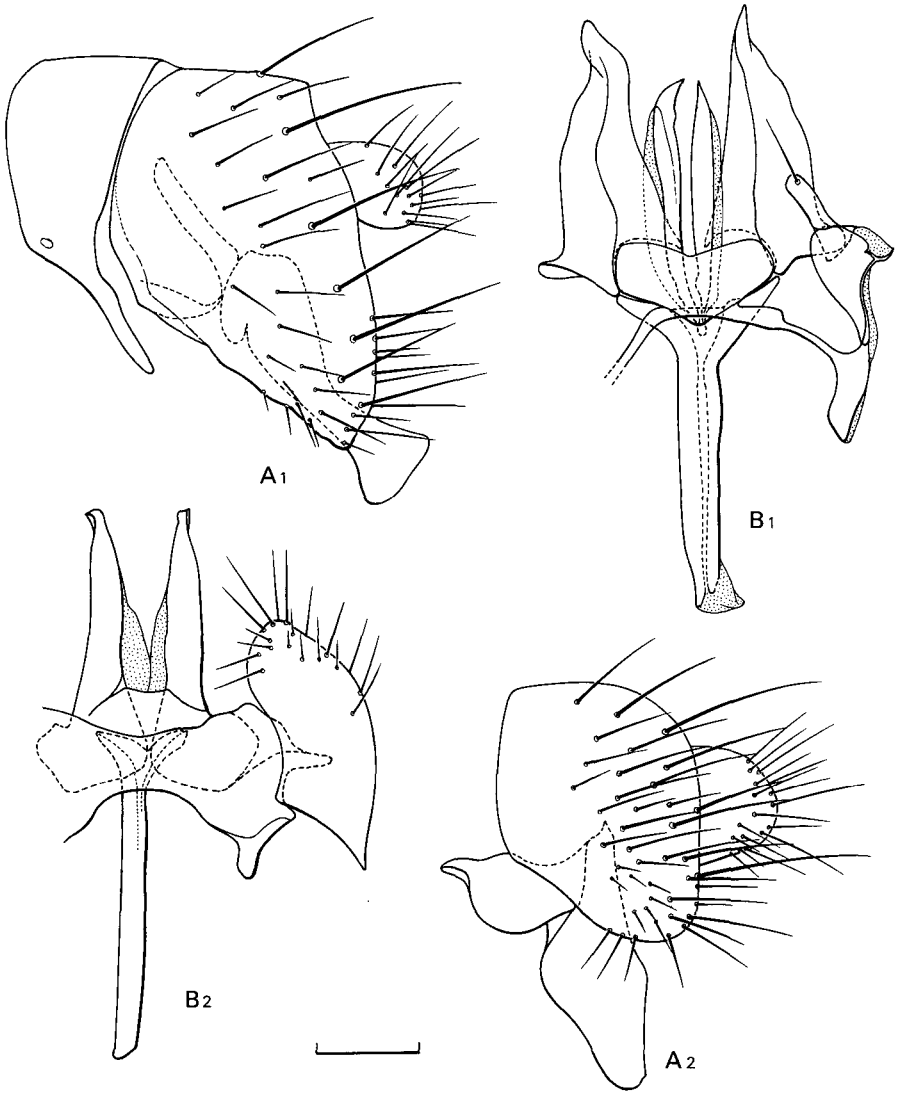

Fig. 10. *Homoneura* (*Minettioides*) *orientis* (Hendel)-A_1, B_1 ; *H*. (*M*.) *sexmaculata* n. sp.-A_2, B_2.

weakly carinate on dorsal 1/2 ; eye slightly higher than broad ; gena 1/10 height of eye ; *pm* 5 or 6, very short ; antennal segment 3 twice as long as wide, narrowing apically ; arista short-haired, with longest hair a little longer than 1/2 of width of segment 3.

Mesonotum with 0+3 *dc*, distance between lst and 2nd *dc* approximately twice as long as that between suture and 1st *dc*, 8 irregular rows of *acr*, *prsc* long, *ia* slightly shorter than 1st *dc*, presutural *ia* 1/2 of the postsutural, *ipa* slightly shorter than *opa* ; C-index 3.6, r-m before middle of discal cell, 4V-index 1.7, 5V-index 0.25 ; f_1 with 4 *pv*, f_2 with 4 or 5 *a* ; t_2 with 1 long and 2 short spurs, t_3 with *pd*.

Protandrium horseshoe-shaped; S4-6 each quadrate, slightly wider than long; epandrium (Fig. 10) densely setigerous, without surstylus; hypandrium broad band-like, with very short apodemes basally, gonites absent; aedeagus with lateral sclerites almost parallel-sided; aedeagal apodeme longer than aedeagus.

Body length 3.8 mm, wing length 3.2 mm.

Holotype ♂, Sepilok Forest Reserve, Sabah, Borneo, 7. X. 1988 (M.S.); left wing, abdomen and genitalia mounted on a small slide and pinned.

Distribution. Borneo (Sabah).

SUBGENUS EUHOMONEURA MALLOCH

None of the species has been recorded from Malaya and Borneo. Occurrence of 2 Oriental species and description of a new species are given below.

Key to the species of subgenus *Euhomoneura*

1. Mesonotum testaceous yellow, golden pollinose and brownish trivittate; brown spot over r-m isolated. ..... *balluca* n. sp.
- Mesonotum dark brown, gray or yellowish gray pollinose; spot on r-m connected with basal markings in cell R_1 and cell R_3. 2
2. Antennal segmens 1-2 yellow; thoracic pleura largely and scutellum almost entirely yellow; femora brown, each with yellow ring at middle. ..... *lunata* (de Meijere)
- Antennal segments 1-2, pleura largely, anterior half of scutellum and femora entirely brown to brownish black. ..... *ornatipennis* (de Meijere)

14. *Homoneura* (*Euhomoneura*) *balluca* n. sp.

Diagnosis. This testaceous yellow species is distinguishable by having the golden pollinose and 3 brown-vittate mesonotum, and anteriorly yellowish and spotted wings. It differs from *H. lunipennis* (de Meijere, 1924), known from Sumatra, by its coloration of face and mesonotum, and wing pattern.

Female. Head yellow; frons sparsely whitish pollinose, frontalia with a pair of pale brown stripes on ventral 1/2; occiput with pale brown transverse band; face densely whitish pollinose, with pale brown band on ventral 1/2 and distinctly darkened laterally, and a pair of brown semicircular spots just ventrad of antennal bases; parafacialia with a pale brown spot laterad of antennal base; antenna pale testaceous, segment 3 brownish on apical 1/3 and along ventral margin in outer side, arista brown; palpus yellow but brown on tip. Thorax testaceous yellow; mesonotum golden pollinose, with 3 brown vittae: median one just mesad of *dc*-lines, constricted before *prsc*, and dusted with brown centrally and with yellowish gray laterally, lateral ones on *prs*-lines, running from anterior gibbosity of notum to bases of *opa*, *sa* on ventral edge of vitta; pleura sparsely whitish pollinose, with 2 brown stripes running along dorsal margins of meso- and sternopleura; lower pleurotergite and postontum pale brown; anterior margin of scutellum concolorous with median vitta of mesonotum. Wing tinged with yellow, especially from cell R_1 to cell R_5; brown spots on R_{2+3} and r-m isolated, dark marking on m-m extended over ultimate section of M_{3+4}; halter yellow. Legs yellow but coxae and femora brown, tibiae each with brown rings on both extremities. Abdomen testaceous;

tergites brownish anteriorly, T6 with a pair of brown spots laterally.

Frons slightly wider than long, 1.5 times as wide as eye, parallel-sided ; lower *or* about 2/3 of the upper ; *oc* longer than lower *or* ; face weakly swollen centrally ; eye slightly higher than broad ; gena 1/8 height of eye ; *pm* 7, short ; antennal segment 3 nearly twice as long as wide, narrowing apically ; arista plumose, with dorsal longest hair 1.6 times as long as width of segment 3 ; palpus with ventrolateral and apical setae rather long.

Mesonotum with 1+2 *dc*, 1st *dc* just before suture, 6 rows of *acr*, *prsc* subequal to *ipa* which is 1/2 of *opa*, 2-3 sparse rows of *ia*-setulae. Wing with C-index 2.5, r-m on apical 1/4 of discal cell, 4V-index 4.0, 5V-index 0.17 ; f_1 with 5 *pv*, f_2 with 5-8 *a* ; t_2 with 2 spurs, of which outer one is 1/2 of the inner ; all tibiae with *pd*.

Body length 3.2 mm, wing length 2.6 mm.

Male unknown.

Holotype ♀, Kampong Tekek, Pulau Tioman, Pahang, Malaya, 13. IX. 1990 (M.S.).

Distribution. Malaya.

15. *Homoneura* (*Euhom.*) *lunata* (de Meijere)

Lauxania lunata de Meijere, 1910 : 135.
Lauxania irrorata de Meijere, 9114 ; 232.

H. lunata and *ornatipennis* are closely related to each other, and both strikingly colored and dusted. Wings are 2.2-2.7 mm long and marked with fuscous irregular-shaped spots and stripes. *Lunata* is characterized by the yellow antennal segments 1-2, whitish dusted humerus and pleura (excpepting brown transverse vittae along both dorsal margins of meso- and sternopleura), yellow scutellum with anterior margin brown, yellow rings at middle of brown femora, two yellow prebasal and preapical rings on t_2 and one large ring at middle of t_3. In *ornatipennis* the basal segments of antenna brown to brownish black, pleura largely brown, about anterior half of scutellum brownish black, all femora entirely brownish black, and all tibiae yellow except both ends.

Protandrium horseshoe-shaped, longer than epandrium on dorsal side ; S4-6 2-2.5 times as wide as long ; epandrium with 2 pairs of long bristles on dorsal side ; surstylus (Fig. 11) claw-like, pointed dorsoapically ; hypandrium H-shaped, with distal apodemes strongly divergent, praegonite small, postgonite absent ; aedeagus with a pair of long claw-like processes at end of lateral sclerites and with a pair of teeth at middle of dorsal side ; aedeagal apodeme slightly shorter than aedeagus.

Specimens examined. MALAYA : 1♂1♀, FRIM, Kepong, Selangor, 5. & 22. VIII. 1986 (M.S.) ; 1♀, Kampong Jeram, Kelantan, 10 IX. 1990 (M.S.). SABAH : 1♀, Sensuron, 9-11. I. 1959, at light (J.S.) ; 1♀, Kota Kinabalu, 4. X. 1988 (M.S.) ; 2♂, Sepilok Forest Reserve, 26 & 28. X. 1957 (J.G.) ; 1♀, Forest Camp, 19 km N. of Kalabakan, 16. XI. 1962 (K.K.) ; 1♂, Gomantong Caves, 22. XI. 1958 (T.M.) ; 1♂, Sapagaya Lumber Camp, Sandakan Bay, 2. XII. 1957 (J.G.). SARAWAK : 1♀, Tebang, 5. IX. 1958, at light (T.M.) ; 1♀, Kampong Tapuh, Sadong, 4. VII. 1959 (T.M.).

Distribution. Java, Philippines, Malaya, Borneo. New to Malaya and Borneo (Sabah, Sarawak).

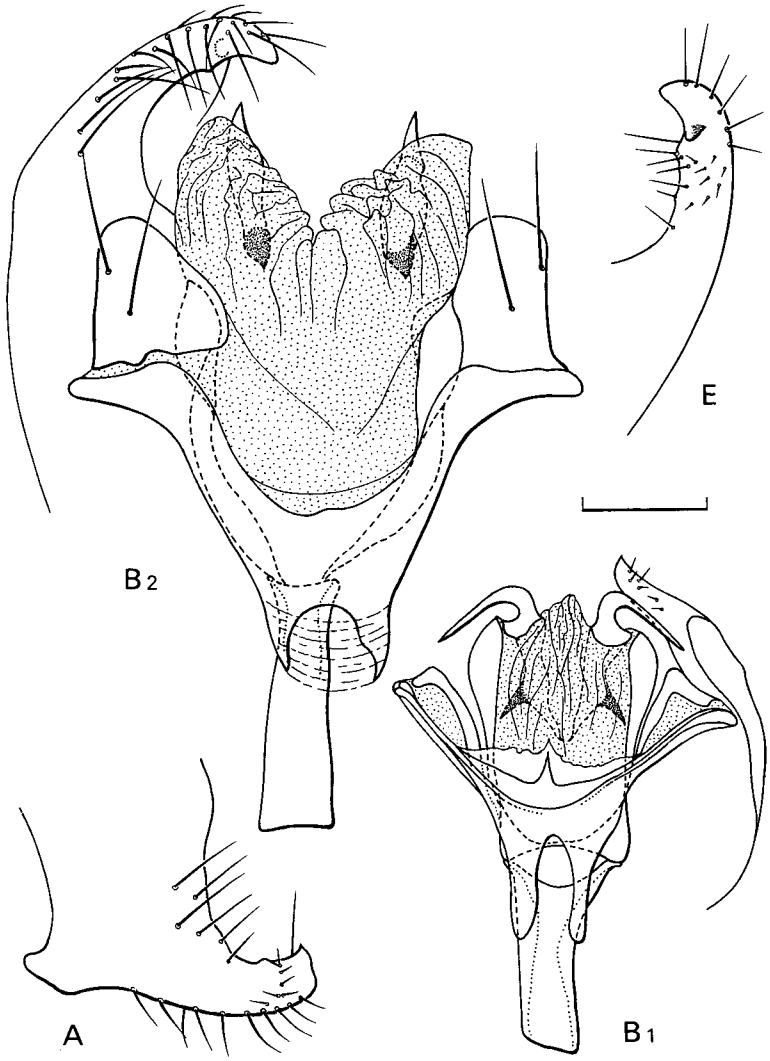

Fig. 11. *Homoneura* (*Euhomoneura*) *lunata* (de Meijere)-A, B_1 ; *H*. (*E*.) *ornatipennis* (de Meij.)-B_2, E, surstylus, outer side.

16. *Homoneura* (*Euhom.*) *ornatipennis* (de Meijere)

Lauxania ornatipennis de Meijere, 1910 : 141.
Homoneura (*Euhom.*) *atrogrisea* Malloch, 1926 : 46.

Male genitalia differ from those of *lunata* in the following points : surstylus (Fig. 11) long, curved inward ; hypandrium with basal apodemes very short ; praegonite very large, with 2 setae ; aedeagus with 2 pairs of short spine-like processes, one pair directed anteriorly and the other posteriorly ; aedeagal apodeme about 1/2 of aedeagus.

Specimens examined. MALAYA: 3♂1♀, FRIM, Kepong, Selangor, 7. VIII. 1986 (M.S.); 1♂2♀, Kampong Jeram, Kelantan, 10. IX. 1990 (M.S.); 1♀, Kampong Tekek, Pulau Tioman, Pahang, 13. IX. 1990 (M.S.).

Distribution. Java, Philippines, Malaya, Ceylon; NE Australia. New to Malaya.

Subgenus Homoneura van der Wulp

This is the largest subgenus in the Oriental *Homoneura*. Ten species, including the endemic *nigrita* Malloch (1929), have been recorded from Singapore, Malaya, and only one endemic species, *provicta* (Walker, 1856), has been known from Sarawak, Borneo. In this paper, 16 (6 new species), 15 (4) and 21 (9) species are added newly to the Malayan, Bornean and Malayan-Bornean fauna, respectively, but the above-mentioned 2 species and 4 other known species, *dentifera* Malloch (1929), *exigua* (de Meijere, 1908), *nudiseta* (Kertész, 1900) and *picipes* (Walker, 1859), were unavailable for examination.

This subgenus consists of 2 large, supposedly monophyletic groups, differing from each other by the general body color: one of them is pale (yellow to brownish yellow), the other is dark (brown to black). Each group may be subdivided into several species-groups and isolated species by external features such as the coloration of 3rd antennal segment, mesonotum and abdominal tergites, the maculation of wing, the feathering of arista, the setal length and arrangement, the number of

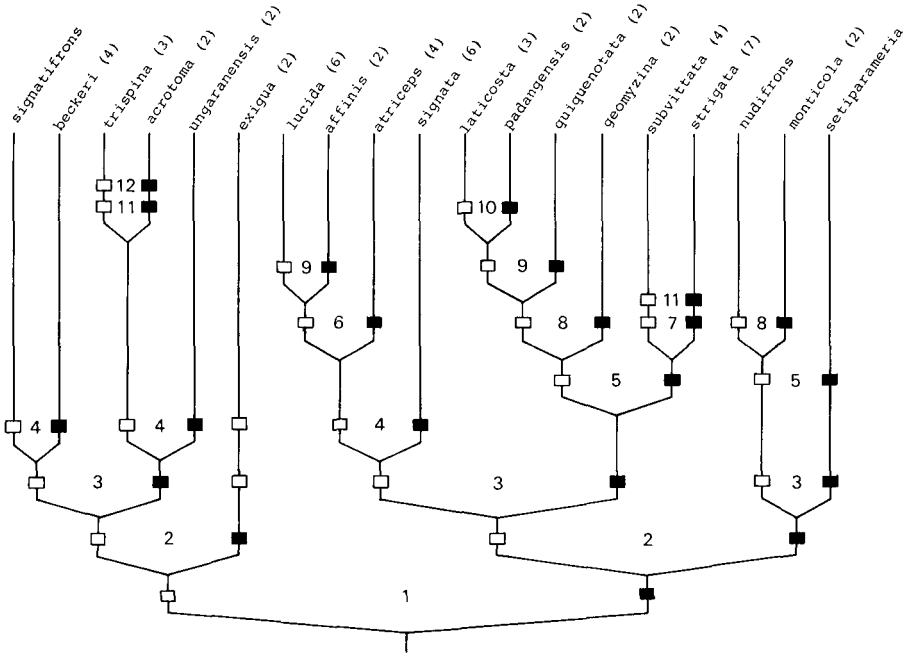

Fig. 12. Hypothetical phylogeny for the species-group and species of subgenus *Homoneura*, based on the character states in Table 2. Open squares, plesiomorphic and solid squares, apomorphic character states.

Table 2. Character states used in Fig. 12.

Character	Plesiomorphic	Apomorphic
1. General color of body	brown to black	yellow to brownish yellow
2. Feathering of arista	short-haired to plumose	pubescent
3. Maculation of wing	absent or faintly bordered around m-m with brown	present
4. Color of abdomen	unicolor	bi- to multicolor
5. Color of mesonotum	unicolor	bi- to multicolor
6. Preapical bristle on tibia	present in all tibiae	absent on hind tibia, which is carinated distally instead
7. Acrostichal setae	8-10 rows	less than 6 rows
8. Acrostichal setae	all subequal in length	several elongate pre- and postsutural pairs
9. Color of 3rd antennal segment	unicolor	bicolor
10. Wing vein M_{3+4}	equable	thickened at base and hairy on that part
11. Shape of protandrium	annular	horseshoe
12. Surstyli	2 pairs	1 pair

surstyli and the shape of protandrium. The relationships among the species and species-groups are summarized in a cladogram (Fig. 12), with a list of supportive character evidence (Table 2). The 1st group contains 14 Malayan and Bornean species (*dentifera* included in the *trispina*-group, and *exigua* and *nudiseta* in the *exigua*-group), and the 2nd group 42 species. Most of the species in the 1st group are scanty of apomorphic character states.

Key to the species of subgenus *Homoneura*

1. Thorax and abdomen largely yellow to testaceous. 2
- Thorax entirely or largely brown to black. 44
2. Wing hyaline or with m-m slightly clouded. 3
- Wing with quite evident dark markings. 24
3. Arista pubescent. 4
- Arista plumose. 6
4. Mesonotum with several pairs of well developed postsutural *acr* in addition to *prsc*. 5
- Mesonotum with only *prsc* pair; T5 with a pair of large black spots on lateral sides. ..... *nudifrons* (Kertész)
5. 1+4 *acr*; *oc* 1/2 as long as lower *or*; t_2 with only one spur; T4-6 with median fasciae and lateral bands. ..... *monticola* (de Meijere)
- 0+3 (4) *acr*; *oc* slightly shorter than lower *or*; t_2 with 3 spurs; T5 with 2 or 3 spots only. ..... *philippinensis* Malloch
6. Hind tibia with *pd*. 7
- Hind tibia without *pd*; antennal segment 3 and mesonotum bicolored. 21
7. Antennal segment 3 bicolor. 8
- Antennal segment 3 unicolor. 9
8. Frons and palpus unicolor; *acr* in 6 rows; wing clear; surstylus simple, claw-like; hypandrium U-shaped. ..... *affinis* Malloch
- Frons and palpus bicolor; *acr* in 10 rows; both crossveins clouded faintly; surstylus

consists of 2 processes; hypandrium H-shaped. ..... *bakeri* Malloch

9. Abdomen with some round black spots or bands on at least one of the tergites, usually T5. 10
- T without distinct spots or bands. 15

10. Wing with m-m clouded; protandrium ringed. 11
- Wing with m-m not clouded at all. 14

11. T5 or 5-6 with black spots. 12
- T3- or 4-6 with black posterior bands on each lateral side. 13

12. T5 with a pair of spots. ..... *neosignata* Malloch
- T5-6 each with a median spot and 2 pairs of lateral spots. ..... *mediosignata* (Frey)

13. T3-6 each with a pair of bands. ..... *octopannosa* n. sp.
- T4-6 each with a median fascia and lateral bands. ..... *trifasciata* (de Meijere)

14. T5 with a pair of spots; *oc* 1/2 of lower *or*; protandrium horseshoe-shaped, surstylus indistinct, hypandrium H-shaped. ..... *forcipata* (Kertész)
- T5-6 each with 2 pairs of spots; *oc* as long as lower *or*; protandrium ringed, surstylus well projected, hypandrium U-shaped. ..... *signata* (van der Wulp)

15. Mesonotum with 6 rows of *acr*. 16
- Mesonotum with 8-10 rows of *acr*. 19

16. Lower *or* 1/2 as long as the upper; m-m not clouded; aedeagus with sclerites smooth, both gonites developed. ..... *lucida* (de Meijere)
- Lower *or* over 1/2 of the upper; m-m faintly clouded; postgonite absent. 17

17. Epandrium of normal shape; hypandrium narrow bridge-like. 18
- Epandrium with 2 long processes on each ventral side; hypandrium long V-shaped. ..... *spinulosa* n. sp.

18. Protandrium ringed; aedeagus with lateral sclerites smooth. ..... *laticosta* (Thomson)
- Protandrium horseshoe-shaped; aedeagus with a pair of tooth-like processes. ..... *debilis* n. sp.

19. Uppermost one of *pm* vibrissa-like, longer than others. ..... *simplicissima* (de Meijere)
- All *pm* short, in same length. 20

20. Praegonite largely membranous, postgonite absent; aedeagus thrice as long as aedeagal apodeme. ..... *sauteri* Malloch
- Praegonite filiform, postgonite with 3 pairs of long processes; aedeagus shorter than aedeagal apodeme. ..... *multicornuta* n. sp.

21. Mesonotum brownish-vittate; wing faintly clouded over m-m; t_2 with only one long spur, t_3 with a sharp carina on dorsodistal surface. 22
- Mesonotum not vittate; wing clear; t_2 with 2 spurs, t_3 without carina. ..... *demeijerei* Malloch

22. Lower *or* less than 1/3 as long as the upper; cercus elongate in male; surstylus consists of 2 processes; postgonite absent. 23
- Lower *or* about 1/2 length of upper; cercus and surstylus normal; hypandrium U-shaped, with a distinct apodeme posteriorly; both gonites developed. ..... *hypopygialis* n. sp.

23. Face and parafacialia dark brown; f_2 without long *pv*. ..... *atriceps* Malloch
- Face and parafacialia yellow; male f_2 with 4-5 fine long *pv*. ..... *bilineella* (Frey)

24. Arista pubescent; *oc* 1/3 length of lower *or*; gonites distinctly setose. ..... *setiparameria* n. sp.
- Arista short-haired or plumose; *oc* more than 1/2 of lower *or*. 25

25. Mesonotum with brown vittae. 26
- Mesonotum without vittae. 34

26. Mesonotum bi- or trivittate. 27
- Mesonotum more than quadrivittate. 28

27. Wing with 2 small spots on R_{4+5} beyond r-m in addition to apical one; frontalia with a brown median stripe; surstylus consists of 2 processes. ..... *centralis* n. sp.
- Wing without spot except for preapical spot on R_{4+5}; frontalia without stripe; surstylus short, projected on inner side of epandrium which is swollen gibbously on anteroventral corner. ..... *gibbosa* n. sp.

28. Wing with anterior margin broadly brown along costa. 29
- Wing with anterior margin hyaline to apical marking of R_{2+3} or brown with 2 elongate spots

in cell R_1. 30

29. Thoracic pleura with 2 brown stripes along ventral margins of noto- and mesopleuron; *oc* slightly shorter than lower *or*; only praegonite developed. .... *quinquevittata* (de Meijere)
- Stripe on mesopleuron incomplete, divided into 2 spots; *oc* 1/2 of lower *or*; prae- and postgonites developed. ..... *pleuripuncta* Malloch

30. *Acr* in 6 rows. 31
- *Acr* in 8-10 rows. 33

31. Wing with a spot on apical 1/3 of cell R_1; T3-6 faintly brown-tinged; aedeagus distinctly dentate on ventral side. ..... *dentata* n. sp.
- Wing with 2 elongate spots slightly separated at level of 1st spot on R_{4+5} in cell R_1. .. 32

32. Mesonotum brownish vittate; longest hair on arista shorter than width of antennal segment 3; T3-6 brown-fasciated centrally. ..... *strigata* (de Meijere)
- Mesonotum distinctly whitish pruinose between dark brown vittae on *dc*-lines; longest hair on arista slightly longer than width of segment 3; T3-6 yellow-fasciated centrally. ..... *discoalbata* n. sp.

33. Face and parafacialia entirely yellow; arista with longest hair shorter than width of antennal segment 3; protandrium ringed, hypandrium H-shaped. ..... *subvittata* Malloch
- Face with 2 dark transverse bands along dorsal and ventral margins, parafacialia with a pale brown spot laterad of base of antenna; arista with hair as long as width of segment 3; protandrium horseshoe-shaped, hypandrium U-shaped. ..... *malayensis* n. sp.

34. Wing hyaline, with dark markings, 2nd costal section 3-4 times as long as the 3rd, m-m almost perpendicular to penultimate section of M_{3+4}. 35
- Wing brown, with many hyaline round or oblong spots, 2nd costal section 2-2.5 times as long as the 3rd, m-m oblique, forming an acute angle with penultimate section of M_{3+4}. 41

35. M_{3+4} normal at base. 36
- M_{3+4} thickened for a short distance at base of discal cell. 42

36. Antennal segment 3 unicolor; hind tibial *pd* as long as the others. 37
- Antennal segment 3 bicolor (black on apical 1/3-1/2); hind tibial *pd* short. 43

37. Wing with anterior margin broadly brown along costa. 38
- Wing with anterior margin hyaline or only brown-spotted on apex of R_{2+3}. 40

38. Mesonotum with one presutural and one postsutural long *acr* in addition to *prsc*. 39
- Mesonotum wirh *acr* in 6 rows and only *prsc* strong. ..... *laticosta* (Thomson)

39. *Acr* in 2 rows; T5 with a pair of black square spots on dorsal side; protandrium horseshoe-shaped. ..... *geomyzina* (Frey)
- *Acr* in 6 rows; T4-6 each with a median spot and lateral bands; protandrium ringed. ..... *ypsilon* n. sp.

40. Wing brown-spotted on apices of R_{2+3}, R_{4+5} and M_{1+2}, and over both crossveins, 2 small spots on R_{4+5} beyond r-m. ..... *bicuspis* n. sp.
- Wing with 3 brown fasciae across the wing at levels of r-m, m-m and apex of R_{2+3}. ..... *trivittata* n. sp.

41. Wing with a small hyaline spot close against each side of m-m near anterior extremity; femora yellow, each with brown preapical ring; epandrium with 2 pairs of long marginal bristles, surstylus hooked. ..... *trypetoptera* (Hendel)
- Wing without hyaline spot on each anterior side of m-m; femora brown excepting apices yellow; epandrium with 3 pairs of long marginal bristles and densely setigerous along ventral margin, surstylus slender. ..... *picta* (de Meijere)

42. Wing with anterior costal marking connected with apical markings of R_{4+5} and M_{1+2}; T4-6 with median fasciae and T5-6 with lateral bands; protandrium ringed. ..... *subcostalis* n. sp.
- Wing with apical markings isolated from each other; T4-6 each with a black round spot at middle; protandrium horseshoe-shaped. ..... *padangensis* (de Meijere)

43. Arista with dorsal longest hair twice as long as width of antennal segment 3; lower *or* 2/3 length of the upper; *acr* in 10 rows; hypandrium H-shaped. ..... *hamulifera* n. sp.
- Arista with longest hair almost as long as width of segment 3; lower *or* 1/2 of the upper; *acr* in 8 rows; hypandrium ill developed. ..... *quiquenotata* (de Meijere)

44. Abdomen entirely black. 45
- Abdomen entirely or partly yellow to testaceous. 49

45. Wing hyaline; mesonotum and abdomen distinctly shining. ..... *signatifrons* (Kertész)
- Wing infuscated at base 46
46. Protandrium ringed; surstylus consists of 2 processes. 47
- Protandrium horseshoe-shaped. 48
47. Epandrium with posteroventral corner bare; anterior process of surstylus claw-like. ..... *trispina* Malloch
- Epandrium with posteroventral corner spinulose; anterior process of surstylus lobate. ..... *folifera* Malloch
48. Mesonotum with 10 rows of *acr*; *oc* long; t_2 with 3 spurs; surstylus not projected, minutely serrate. ..... *acrotoma* n. sp.
- Mesonotum with 8 rows of *acr*; *oc* hair-like; t_2 with 2 spurs; surstylus well projected. ..... *curtiocellaris* n. sp.
49. Wing hyaline or faintly brownish bordered around m-m. 50
- Wing maculate; hypandrium Y-shaped. 53
50. Mesonotum and scutellum with whitish gray median vitta; hypandrium somewhat Y-shaped. ..... *discoglauca* (Walker)
- Mesonotum and scutellum not vittate, pollinose all over; hypandrium W-shaped. 51
51. Mesonotum bluish gray dusted; T1-5 black, 6-9 yellow. ..... *immaculata* (de Meijere)
- Mesonotum whitish gray dusted; T1-9 yellow but 3-5 banded. 52
52. Face entirely yellow; T3-5 with posterior bands complete; aedeagus with only 2 pairs of spine-like processes. ..... *fasciventris* Malloch
- Face with fuscous band or spots at middle; posterior bands on T3-5 separated by central fasciae; aedeagus densely spinose on ventral apex. ..... *beckeri* (Kertész)
53. Wing brown-spotted on apices from R_{2+3} to M_{1+2}, midway of R_{4+5} and over crossveins; T1-3 testaceous, 4-9 black. ..... *ungaranensis* (de Meijere)
- Wing whitish between brown base and preapical fascia; T1-9 black, 3-6 yellowish-fasciated centrally. ..... *nivalis* n. sp.

17. *Homoneura* (*H.*) *acrotoma* n. sp.

Diagnosis. This black species differs distinctly from the species of *signatifrons*-group by the absence of protrudent surstylus, which is only minutely serrate.

Male. Black excepting base of arista, stalk of halter and all tarsal segments yellow to pale testaceous, anterior margin of frontalia and parafacialia brown-tinged; gena and face silverly whitish pruinose; thorax subshining, sparsely gray dusted; abdomen strongly shining. Wing faintly fulvescent, weakly infuscated at

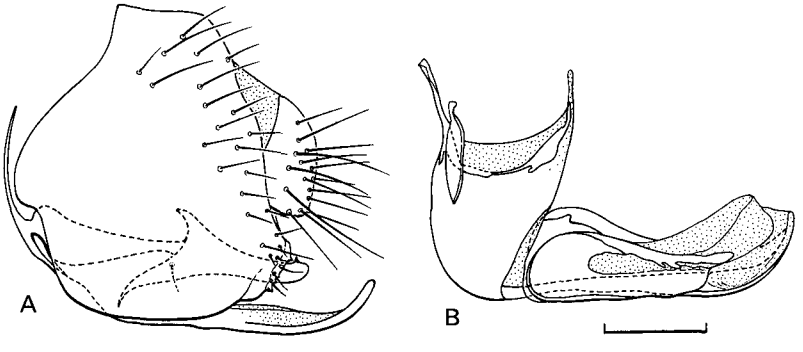

Fig. 13. *Homoneura* (*H.*) *acrotoma* n. sp.

base and in apical part of cell Sc ; calypter white, with fringe yellowish ; halter with knob black except apex.

Frons 1.3 times as wide as long, almost parallel-sided, slightly wider than eye ; lower *or* 3/4 length of the upper ; *oc* slightly longer than lower *or* ; eye 1.2-1.3 times as high as wide ; gena 1/10-1/12 height of eye ; face almost flat ; antennal segment 3 about twice as long as broad, very slightly narrowing apically, arista plumose and with dorsal longest hair about twice as long as width of segment 3.

Mesonotum with 0+3 *dc*, distance between posterior two *dc* about twice as long as that between suture and 1st *dc*, about 10 rows of *acr*, *prsc* longer than 1st *dc* ; anterior *sp* subequal to posterior one in length ; C-index 3.3-3.8, r-m slightly before middle of discal cell, 4V-index 1.4-1.7, 5V-index nearly 0.25 ; f_1 with 4 *pv*, f_2 with usually 5 *a* ; t_2 with 3 long spurs, *pd* on t_3 short.

Protandrium developed semicircularly and setulose on dorsal side ; S5-6 quadrate, the former twice and the latter 1.5 times as wide as long ; epandrium (Fig. 13) extremely broadened ventrally, surstylus not distinctly projected, low-trapezoidal, minutely serrate between 2 distinct dorsal and ventral teeth ; praegonite short and narrowly lobate, postgonite long and with a minute tooth before apex ; aedeagus curved upward at distal end, with lateral sclerites serrated irregularly.

Body length about 4.5 mm, wing length 3.8 (holotype)-4.3 mm.

Holotype ♂, Sepilok Forest Reserve, Sabah, Borneo, 6. X. 1988 (M.S.). Paratypes : 1♂, same data as holotype ; 1♂, Kampong Moyog (350 m), nr. Kota Kinabalu, Sabah, 27. IX. 1988 (M.S.).

Distribution. Borneo (Sabah).

18. *Homoneura* (*H.*) *affinis* Malloch

Homoneura affinis Malloch, 1929 : 81

This small, shining testaceous species is characterized by the black apex of antennal segment 3 (apical 1/3 and ventral 1/2 darkened), short lower *or* (1/2 or less than half of the upper), 6 rows of *acr*, clear wing (about 2.2 mm long) and ventrally lobated epandrium.

Epandrium (Fig. 14) with surstylus projected on posteroventral corner, claw-like and setulose ; hypandrium U-shaped, with basal apodeme slightly sinuated, bearing a seta on lateral end of bridge ; gonites absent ; aedeagus as long as hypandrium, slightly upturned at end ; aedeagal apodeme slightly shorter than aedeagus.

Specimens examined. MALAYA : 1♂1♀, FRIM, Kepong, Selangor, 12. III. 1958 (T.M. & J.S.) ; 1♀, Botanical Garden, Singapore, 10-11. XII. 1958 (T.M.). SABAH : 1♂, Kota Kinabalu, 4. X. 1988 (M.S.).

Distribution. Philippines, Malaya, Borneo (Sabah). New to Malaya and Borneo.

19. *Homoneura* (*H.*) *atriceps* Malloch

Homoneura atriceps Malloch, 1929 : 76.

This shining testaceous yellow species is distinct in the following characteristics : blackish brown face and parafacialia ; short lower *or* (about 1/3 length of the

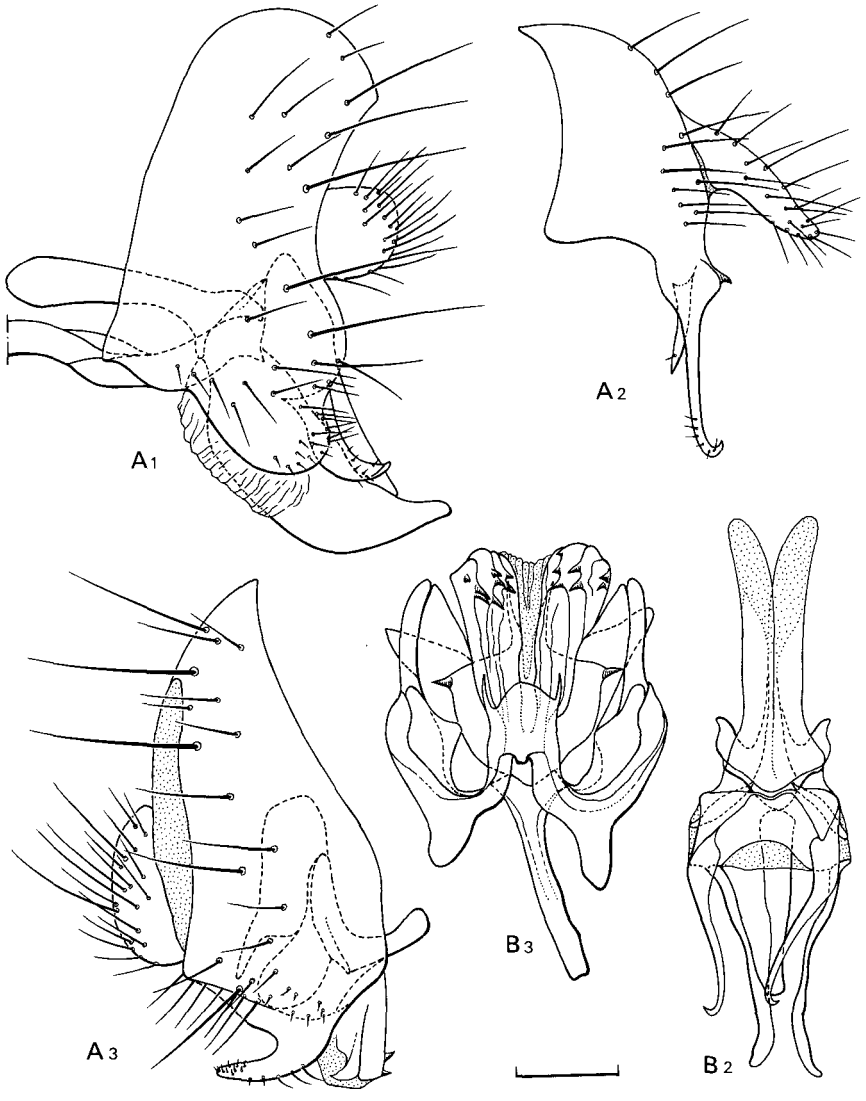

Fig. 14. *Homoneura* (*H.*) *affinis* Malloch-A_1 ; *H. atriceps* Mall.-A_2, B_2 ; *H. beckeri* (Kertész)-A_3, B_3.

upper) ; largely black antennal segment 3 ; a pair of fuscous vittae between 2nd and 3rd lateral rows of *acr* connected with dark transverse band on anteromedian part of scutellum ; brown ventral margin of notopleuron ; 2 processes of surstylus ; absence of *pd* on t_3, which is carinated posterodistally. Wings 2.2-2.3 mm long, faintly clouded around m-m.

Protandrium horseshoe-shaped ; S5-6 each twice as wide as long ; surstylus (Fig. 14) consisting of 2 long processes, of which outer one twice as long as the inner and hooked on tip ; cercus very long ; hypandrium narrow U-shaped ; praegonite almost as long as outer process of surstylus and hooked on tip, postgonite absent ;

aedeagus narrow, adedagal apodeme shorter than aedeagus.

Specimens examined. 1♂1♀, Sepilok Forest Reserve, Sabah, Borneo, 7. X. 1988 (M.S.).

Distribution. Philippines, Borneo (Sabah). New to Borneo.

20. *Homoneura* (*H.*) *bakeri* Malloch

Homoneura bakeri Malloch, 1929 : 75.

This shiny testaceous yellow species is distinguished from *affinis* by its narrowly

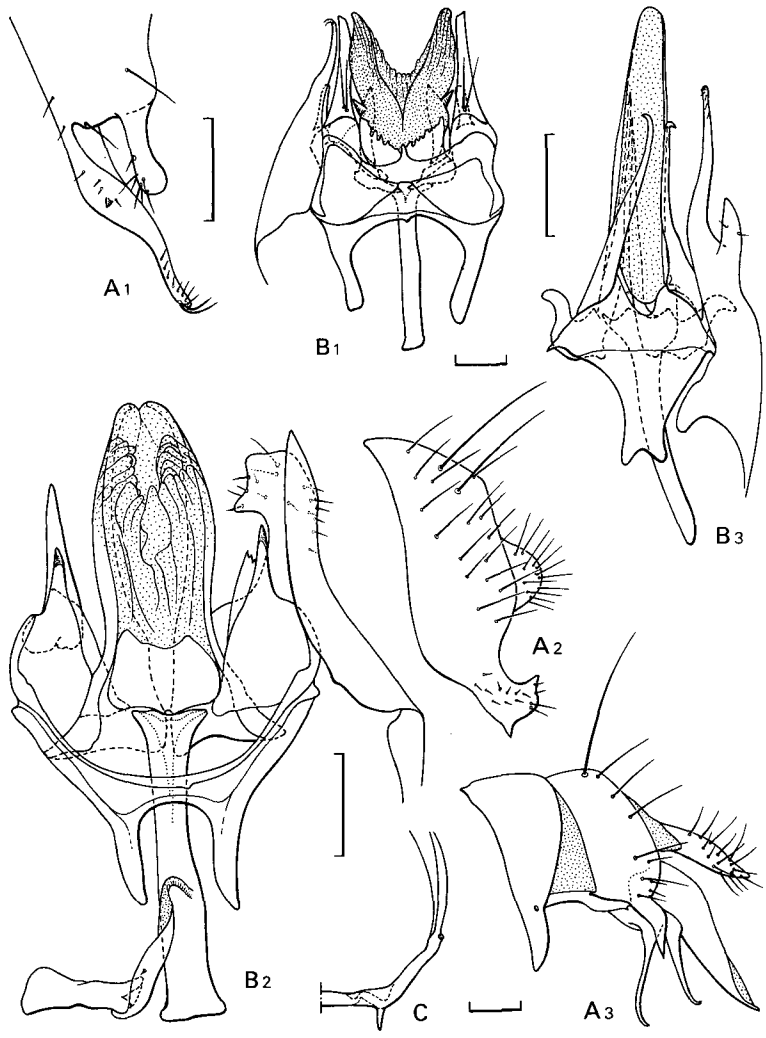

Fig. 15. *Homoneura* (*H.*) *bakeri* Malloch-A_1, B_1 ; *H. bicuspis* n. sp.-A_2, B_2, C, ventral part of protandrium ; *H. bilineella* (Frey)-A_3, B_3.

triangular brown mark on each side of frons between lower part of parafrontalia and eye, bicolor palpus, dense rows of *acr* and 2 processes of surstylus.

Other main characters are as follows: Frontalia with a pair of pale brown stripes inside parafrontalia; parafrontalia and face conspicuously whitish pollinose; lower *or* about 1/2 of the upper; face rather distinctly convex on ventral 2/3; arista plumose, with longest hair nearly twice as long as width of segment 3; *acr* in 10 rows; C-index 2.7-2.8, r-m at middle of discal cell; both crossveins faintly bordered with brown.

Protandrium ringed, setulose, sternite subtriangular and with a pair of setulae; S4-5 each about 2.5, S6 1.7 times as wide as long; surstylus (Fig. 15) 2, anterior one long but posterior one short and slightly swolllen distally; hypandrium H-shaped, with another bridge posteriorly; praegonite truncated on tip, with 2 long setae; aedeagus with lateral sclerites short, each bifurcated into a large tooth laterally and a minute one posterodorsally; aedeagal apodeme slightly shorter than aedeagus.

Specimens examined. 1♂1♀, Kuala Tahan, Pahang, Malaya, 12-14. XII. 1958 (L.Q.); 1♀, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.).

Distribution. Philippines, Malaya. New to Malaya.

Remarks. Cloud over r-m is indistinct or quite absent in the females examined. Malloch referred to the absence of hind tibial *pd*, but all the specimens examined have very short one, which is shorter than width of tibia.

21. *Homoneura* (*H.*) *beckeri* (Kertész)

Sapromyza beckeri Kertész, 1900: 266.

General characters of this gray-dusted fuscous species were redescribed by Sasakawa (1987). It belongs to the *immaculata*-group with the annular protandrium and W-shaped hypandrium; surstylus (Fig. 14) at middle of ventral side of epandrium, somewhat claw-like; praegonite slender, postgonite lobate and bifurcate distally; aedeagus densely spinose on ventral apex.

Specimens examined. MALAYA: 1♂, Port Dickson, Negeri Sembilan, 14-17. VIII. 1986 (M.S.), 2♂, Sungai Buloh, Selangor, 20. VIII. 1986 (M.S.); 5♂4♀, FRIM, Kepong, Selangor, 22-23. VIII. 1986 (M.S.), 8♂1♀, FRIM, 23-25. IX. 1990 (M.S.); 1♀, FRIM, 12. III. 1958 (T.M.), 2♂, 13-21. III. 1966, at light (J.S.); 3♀, Gombak Forest Reserve, nr. Kuala Lumpur, 28. XII. 1958 (L.Q.); 4♂, Kampong Jeram, Kelantan, 10. IX. 1990 (M.S.); 1♂3♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-14. XII. 1958 (J.G.); 3♂3♀, Kuala Tahan, Pahang, 12-14. XII. 1958, primary forest (T.M.); 1♀, Botanical Garden, Singapore, 10-11. XII. 1958 (T.M.).

Distribution. Thailand, Malaya, Krakatau, Java, Sumatra, Lombok, Formosa, India, Nepal.

22. *Homoneura* (*H.*) *bicuspis* n. sp.

Diagnosis. This pale testaceous species is distinctive in the short-haired arista, spotted wing pattern and double-pointed surstylus.

Discussion. This species is intermediate between the Formosan *latifrons* Malloch and *subvittata* Malloch in the wing pattern, but can be separated from them

by its small size and sparse row of *acr*, and also by its short hairs on arista from *latifrons* and by unicolor mesonotum from *subvittata*.

Male and female. Testaceous; head pale, whitish gray pollinose except sparsely dusted frontalia and ventral 2/3 between parafrontalia and eye; abdominal tergites brownish, especially posterolateral margins of T4-5 and entire lateral sides of T6 distinctly brown. Wing hyaline, faintly tinged with yellowish brown along anterior margin, with pale brown markings on apices of R_{2+3}, R_{4+5} and M_{1+2}, and over both crossveins, marking on M_{1+2} elongate (2/3 as wide as length of its ultimate section) but less distinct than others, and with 2 round spots on R_{4+5} beyond r-m: basal one slightly beyond middle between r-m and m-m, and the other larger than the former and connected anteriorly with apical mark on R_{2+3}; calypter with fringe whitish yellow; halter yellow. Legs yellow, tarsal segments 4-5 brownish.

Frons slightly wider than long, 1.5-2.0 times as wide as eye, almost parallel-sided; lower *or* slightly shorter than the upper; *oc* slightly longer than lower *or*; eye as high as or slightly higher than broad; face almost flat; gena 1/6 height of eye; *pm* 8-9; antennal segment 3 1.5 times as long as wide; arista 3.3 times as long as segment 3, with dorsal longest hair about 1/2 width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 6 rows of *acr*, *prsc* 2/3 of 3rd *dc*, *ipa* 1/2-2/3 of *opa*; C-index 3.1, r-m slightly before middle of discal cell, 4V-index 1.3, 5V-index 0.11-0.13; f_1 with 3-4 *pv*, f_2 with 5-6 *a*; t_2 with 3 (2 long and 1 short) spurs, *pd* on t_1 about thrice as long as width of tibia, *pd* on t_3 subequal to that on t_1 in length.

Protandrium ringed, with apodeme dorsally and short ones at both ends of ventral bridge (Fig. 15); S5-6 each slightly longer than wide; surstylus (Fig. 15) pointed at both anterior and posterior ends; hypandrium H-shaped, with distal apodemes divergent; praegonite spinose on tip, postgonite long; aedeagus with lateral sclerites smooth, slightly longer than aedeagal apodeme; ejaculatory apodeme 200 μm long.

Body length 3.0 (♀)-4.3 (♂), 3.1 (holotype) mm, wing length 3.3 (♀)-3.5 (holotype) mm.

Holotype ♀, Kuala Terengganu (200 m), Malaya, 13. XII. 1958 (T.M.) (BISHOP 15064). Paratypes: 1♀, same data as holotype; 1♂, Kuala Tahan, Pahang, 12. XII. 1958 (T.M.)

Distribution. Malaya.

23. *Homoneura* (*H.*) *bilineella* (Frey)

Mallochomyza nothosticta var. *bilineella* Frey, 1927: 38.

This testaceous yellow species is very closely related to *atriceps* Malloch in the bivittate mesonotum, black antennal segment 3, short lower *or*, 2 processes of surstylus and long praegonite. However, it has yellow face and parafacialia, brown semicircular marking on anterior 1/2 of scutellum, annular protandrium, a pair of extremely long bristles on dorsal side of epandrium (Fig. 15) and indistinct apodeme on hypandrium.

Hind tibial carina is distinct in males but not so in females. Male f_2 is provided with 4 or 5 fine long *pv* on basal half.

Specimens examined. MALAYA: 2♂1♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-14. XII. 1958 (J.G.); 11♂7♀, Kuala Tahan, Pahang, 12-14. XII. 1958 (T.M. & J.G.); 1♂, Kuala Terengganu, 14. XII. 1958 (T.M.). SABAH: 1♂1♀, Tenompok, 13-15. II. 1959 (T.M.); 1♀, Sepilok Forest Reserve, 7. X. 1988 (M.S.). SARAWAK: 1♂, Bidi (90-240 m), Bau District, 2. IX. 1958 (T.M.).

Distribution. Philippines, Malaya, Borneo (Sabah, Sarawak). New to Malaya and Borneo.

24. *Homoneura* (*H.*) *centralis* n. sp.

Diagnosis. This new species is distinctive in having a central brown stripe on frontalia and 2 pairs of surstyli on epandrium. Typical wing pattern of this species shows similarity to those of *bicuspis* n. sp. and *subvittata* Malloch, but small brown spots are seen on apex of cell Sc and penultimate section of M_{3+4}, and 1st spot on R_{4+5} beyond r-m is isolated from apical marking on R_{2+3}.

Male and female. Testaceous yellow; head yellow, frontalia with a brown central stripe before brown ocellar triangle, which is bluntly pointed on ventral tip, and not reached to ventral margin of frontalia; frons sparsely and face, parafacialia and postgena densely whitish dusted; antenna and palpus testaceous yellow, arista brown. Mesonotum and mesopleuron slightly tinged with brown, subshining, whitish pollinose, the former with a pair of brown narrow vittae just mesad of *dc*-lines, broadened posteriorly behind 2nd *dc* and extended to dorsolateral parts of scutellum but not reached to posterior margin of scutellum; wing with 5 brown spots: on apices of Sc and R_1, just before apex of R_{2+3}, on apices of R_{4+5} and M_{1+2} (united with

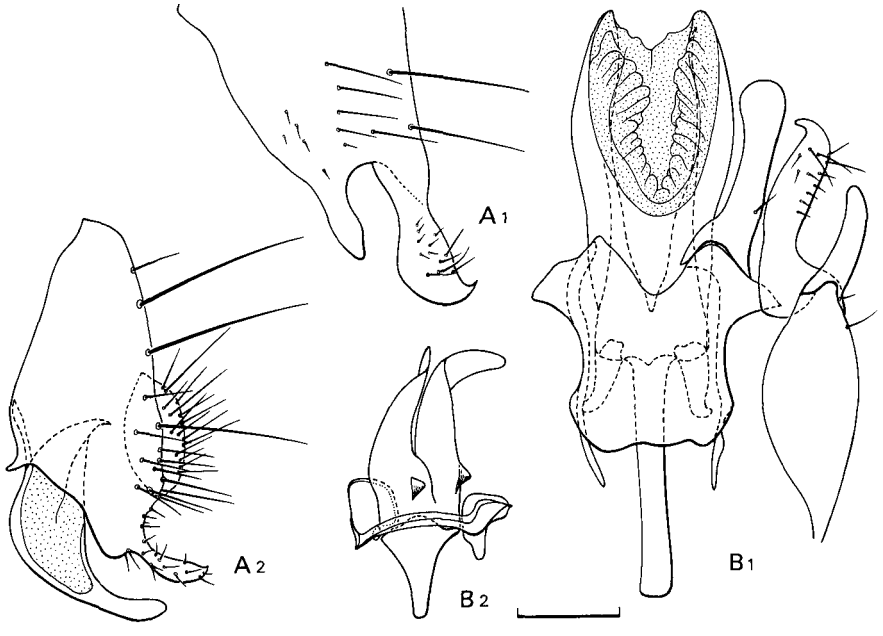

Fig. 16. *Homoneura* (*H.*) *centralis* n. sp.-A_1, B_1; *H. debilis* n. sp. -A_2, B_2.

each other into a single spot but apex of wing between apices of both veins narrowly hyaline) and around both crossveins (stripe over m-m posteriorly extended to ultimate section of M_{3+4}), and 4 pale brown small spots : 2 on R_{4+5} (1st one proximad of level of m-m, 2nd connected anteriorly with large preapical spot on R_{2+3}), one at middle between stripe on m-m and apical spot of M_{1+2}, and one on M_{3+4} just before end of discal cell ; legs yellow, tarsi slightly tinged with brown. Abdomen yellowish brown, more densely dusted than thorax.

Frons slightly wider than long, 1.2-1.3 times as wide as eye, slightly diverging ventrally ; lower *or* slightly shorter than upper ; *oc* slightly longer than lower *or* but shorter than upper *or* ; *oh* several ; many minute inclinate setulae scattered on ventral half of frontalia ; face flat ; eye slightly higher than wide (2.5 : 2) ; gena 1/8-1/9 height of eye ; *pm* 7-9, very short ; antennal segment 3 1.5 times as long as wide, slightly narrowing apically ; arista plumose, with dorsal longest hair 2/3 width of segment 3.

Mesonotum with 0+3 *dc*, 6 rows of *acr*, setae in median rows slightly longer than others, *prsc* 1/2 of 3rd *dc*, *ipa* 2/3 or slightly shorter than *opa* ; C-index 2.6-3.3, r-m at middle of discal cell, 4V-index 1.33-1.38, 5V-index 0.12 ; f_1 with 3-4 *pv*, f_2 with 4 *a* ; t_2 with 3 (1 long, 1 short and 1 minute) spurs, all t with *pd*.

Protandrium horseshoe-shaped ; S5-6 each slightly wider than long ; epandrium (Fig. 16) with 2 surstyli, posterior one longer than anteriorr, pointed on tip and setose ; hypandrium subquadrate, weakly sclerotized, without distinct apodeme ; praegonite long, swollen on apex, postgonite absent ; aedeagus with lateral sclerites smooth ; aedeagal apodeme shorter than aedeagus ; ejaculatory apodeme about 100 μm long.

Body length 3.5-3.7 (holotype) mm, wing length 3.4-3.7 (holotype) mm.

Holotype ♂, Tenompok (1,460 m), 30 mil. E. of Jesselton (Kota Kinabalu), Sabah, Borneo, 2-4. II. 1959 (T.M.) (BISHOP 15070). Paratypes : 1♀, same data as holotype ; 1♂, Kundasang, Sabah, 15. VIII. 1969 (A.T.).

Distribution. Borneo (Sabah).

Remarks. Mesonotal vittae are sometimes indistinct on posterior half, especially in the holotype ; 3 pale brown spots excepting 1st one on R_{4+5} are absent in a male paratype ; 2 pairs of postsutural *acr* in female paratype are nearly twice as long as the others.

25. *Homoneura* (*H.*) *curtiocellaris* n. sp.

Diagnosis. This small black species is unique by having short *oc* and lowor *or*, and by distinctly yellowish brown base of wing. Male is characterized by the spinulose paregonite and short aedeagal apodeme.

Discussion. The coloration and pollinosity of *curtiocellaris* is similar to those of the Philippine *opacithorax* Malloch (1929), but *curtiocellaris* differs from the related species by its pale ventral margin of frontalia, infuscated base of wing, short *oc* and long penultimate section of M_{1+2}. Also, it differs from *acrotoma* by the characters shown in the key.

Male. Black ; ventral margin of frontalia narrowly testaceous ; anterior margin of frons, face, parafacialia and gena noticeably silvery white pollinose ; antenna brownish black except yellow base of arista ; palpus black. Mesonotum shiny,

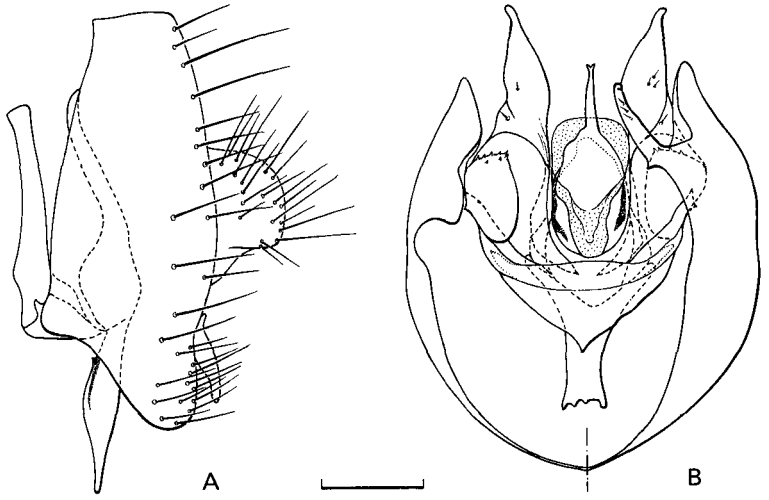

Fig. 17. *Homoneura* (*H.*) *curtiocellaris* n. sp.

brownish gray dusted, scutellum more dusted than notum ; wing faintly tinged with yellow but distinctly yellowish brown proximad of level of Rs ; calypter gray, with margin and fringe brown ; halter with stalk yellow and knob brownish black ; legs black, tibiae brown-tinged, tarsi testaceous. Abdomen strongly shining, very sparsely pollinose.

Frons 1.5 times as wide as long, nearly 1.3 times as wide as eye, almost parallel-sided ; lower *or* 1/2 length of the upper ; *oc* hair-like, about 1/3 of lower *or* ; eye slightly higher than broad (2 : 1.8) ; face flat ; gena 1/10 height of eye ; *pm* 5, very short ; antennal segment 3 about 1.7 times as long as wide, distinctlyy narrowing apically ; arista plumose, with dorsal longest hair 1.5 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 8 rows of *acr* on level of 1st *dc* but 6 rows of them extending posteriorly to level of 3rd *dc* ; *prsc* subequal to 1st *dc* ; *ipa* 1/2 of *opa* ; C-index 3.0-3.1, r-m distinctly before middle of discal cell, 4V-index 1.5, 5V-index 0.25 ; f_1 with 3 *pv*, f_2 with 4 *a* ; t_2 with 1 long and 1 short spurs, all t with *pd*.

Protandrium horseshoe-shaped, about 1/2 as long as T6 ; S4-6 each quadrate, slightly wider than long, without distinct marginal bristles ; epandrium (Fig. 17) lobate ventrally, with surstylus projected on posteroventral corner of epandrium and directed inward apically, minutely pointed forwardly on tip ; hypandrium triangular, weakly sclerotized on basal part ; praegonite ovoid and spinulose distally ; postgonite longer than aedeagus, extremely narrowed on tip, with several setae on lateral side ; aedeagus oval in outline but ventrally with an elongate process which is minutely bifurcated at end ; aedeagal apodeme shorter than aedeagus.

Body length 2.5 mm, wing length 2.1 mm.

Holotype ♂, Kinabalu National Park, Sabah, Borneo, 1. X. 1988 (M.S.) ; abdomen and genitalia mounted on a small slide and pinned.

Distribution. Borneo (Sabah).

26. *Homoneura* (*H.*) *debilis* n. sp.

Diagnosis. This small yellow species is similar to *laticosta* (Thomson) in the long tibial *pd* and narrow hypandrium, but quite different from the latter in the structure of male genitalia as shown in the key. It is similar to the Oriental *unguiculata* (Kertész, 1913) in the structure of surstylus, but its aedeagus is provided with a pair of small tooth-like processes near ventral base. Also, it can be separated from *unguiculata* by its long hairs on arista, strongly shiny mesonotum and faintly clouded m-m.

Male and female. Yellow; frons and antenna orangish; head sparsely pruinose, parafrontalia weakly shining; thorax and abdomen strongly shining. Wing hyaline, usually m-m faintly bordered with brown; tarsal segments 2-4 tinged with brown.

Frons distinctly wider than long (1.5 : 1), 1.6 (♀)-1.8 (♂) times as wide as eye; lower *or* 2/3 length of the upper; *oc* as long as or slightly longer than lower *or*; eye 1.3 times as high as wide; face slightly convex, distinctly beyond parafacialia in profile; gena 1/7 height of eye; *pm* 5 or 6, short; antennal segment 3 1.5 times as long as wide, slightly narrowing apically; arista plumose, with dorsal longest hair 1.5 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 6 rows of *acr*, *prsc* as long as or slightly shorter than 1st *dc*, *ipa* almost 1/2 of *opa*, anterior *sp* only a little shorter than the posterior; C-index 2.9-3.1, r-m before middle of discal cell, 4V-index 1.3 (♀)-1.5 (♂), 5V-index 0.15; f_1 with 3 long and 1 short *pv*, f_2 with 4 *a*, t_2 with 1 long and 2 short spurs, all t with very long *pd*, 2-3 times as long as width of tibia.

Protandrium horseshoe-shaped; epandrium (Fig. 16) with 3 pairs of long marginal bristles, surstylus well projected posteriorly and setose; hypandrium narrow, bridge-like; praegonite lobate, postgonite absent; aedeagus bifid on distal 2/3, with a pair of distinct tooth-like processes near base of ventral side; aedeagal apodeme less than 1/2 of aedeagus.

Body length 2.2 (holotype)-2.6 (♀) mm, wing length 2.5-2.7, 2.6 (holotype) mm.

Holotype ♂, Sandakan, Sabah, Borneo, 10. X. 1988 (M.S.). Paratypes 2♂, same data as holotype; 2♀, FRIM, Kepong, Selangor, Malaya, 14. X. 1988 (M.S.).

Distribution. Malaya and Borneo (Sabah).

27. *Homoneura* (*H.*) *demeijerei* Malloch

Homoneura demeijerei Malloch, 1929 : 75.

This small, brownish yellow and clear-winged species is unique by the bicolor antennae and mesonotum: black on apical 1/2 of antennal segment 3, posterior margin between *dc*-lines behind level of posteriormost *dc*, and anterior part (about 1/3 length of scutellum) of scutellum semicircularly.

Lower *or* about 1/3 length of the upper; wings 2.6-2.9 mm long, C-index 2.8-3.2, 4V-index 1.9-2.1; t_2 with 2 spurs, t_3 without *pd*. Protandrium horseshoe-shaped; epandrium (Fig. 18) sparsely setose, with a pair of long dorsal bristles; surstylus on anteroventral corner of epandrium projected posteriorly in a form of L; hypandrium U-shaped; praegonite narrowed distally and with 2 setae at base, postgonite absent;

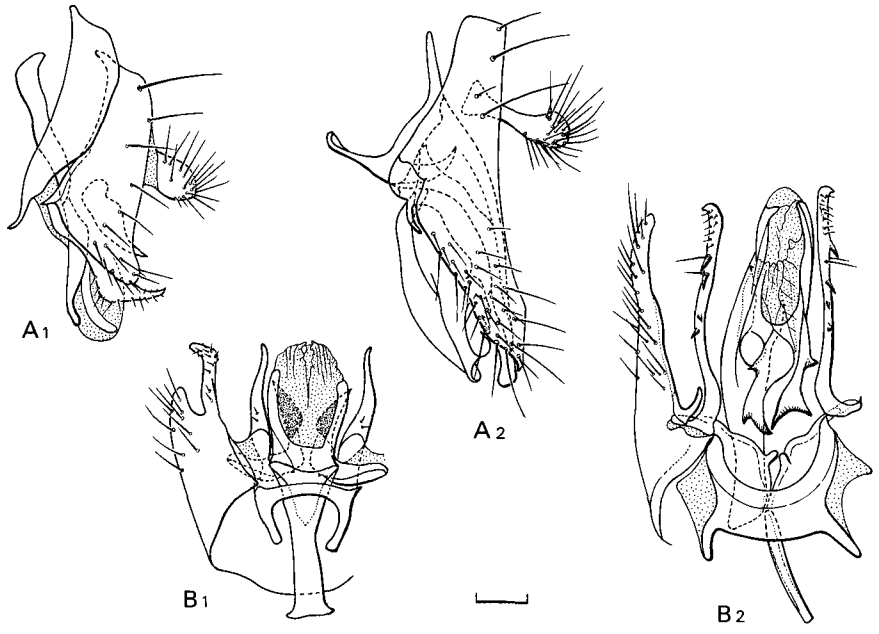

Fig. 18. *Homoneura* (*H.*) *demeijerei* Malloch-A_1,B_1 ; *H. dentata* n. sp.-A_2, B_2.

aedeagus with lateral and ventral sclerites developed ; aedeagal apodeme subequal to aedeagus in length ; ejaculatory apodeme 45 μm long.

Specimens examined. MALAYA : 5♂1♀, FRIM, Kepong, Selangor, 7 & 22. VIII. 1986 (M.S.) : 1♀, Kuala Tahan, Pahang, 12-14. XII. 1958 (T.M.).

Distribution. Sumatra, Malaya. New to Malaya.

28. *Homoneura* (*H.*) *dentata* n. sp.

Diagnosis. This small yellow species may be distinguished by the hairy frontalia, short *oc*, quadrivittate mesonotum and the presence of a broad preapical marking on wing. Males have a pair of short claw-like processes on anteroventral corners of epandrium, spinose postgonites and ventrally dentate sclerites of aedeagus.

Male and female. Yellow ; head pruinose except frontalia faintly tinged with brown ; face with a pair of small brown triangles just ventrad of antennal bases, connecting with brown lines along its lateral margins, which are darkened distinctly on ventrolateral corners ; antenna orangish, segment 3 sometimes brownish apically ; arista brown excepting thickened base yellow ; palpus yellow. Mesonotum and pleura pruinose ; mesonotum with pale brown quadrivittae, median pair of vittae running just mesad of *dc*-lines and lateral ones above *prs*- and *sa*-lines slightly broader than the median but becoming paler behind transverse suture ; scutellum orangish, faintly brownish except median line and lateral margins ; T3-6 faintly tinged with brown. Wing faintly yellowish brown tinged proximad of level of m-m and with brown markings as follows : on tip of cell Sc, around both crossveins, on

apical 1/3 of cell R_1 and preapically on R_{4+5} and M_{1+2}; preapical spots on R_{4+5} and M_{1+2} 1/2 as wide as length of ultimate section of each vein and those fused with apical spot on R_{2+3} into a single broad fascia, extending to posterior margin of wing; cloud on m-m broadened posteriorly and connceted with apical spot of M_{3+4} (about 2/5 as wide as length of M_{3+4}).

Frons as wide as long, 1.3-1.5 times as wide as eye; frontalia with minute hairs sparsely on ventral half; upper *or* slightly longer than the lower; *oc* short, about 1/2 of lower *or*; face convex centrally, distinctly beyond parafacialia in profile; eye slightly higher than broad; gena 1/6-1/7 height of eye; *pm* 5-9, short; antennal segment 3 about twice as long as wide, narrowing apically; arista short-haired, with longest hair barely 1/2 width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 6 rows of *acr*, *prsc* as long as or slightly shorter than 1st *dc*; anterior *sp* 1/2-2/3 of the posterior; C-index 2.7-3, r-m at middle of discal cell, 4V-index 1.5-2, 5V-index 0.19-0.23; f_1 with 2-3 *pv*, f_2 with 4-6 *a*; t_2 with 1 long and 1-2 minute spurs, all t with *pd*.

Protandrium horseshoe-shaped; epandrium (Fig. 18) elongated ventrally, with 2 pairs of long bristles on dorsal side and densely setose on ventral part, and with a claw-like surstylus on anteroventral corner; cercus narrow but swollen distally; hypandrium H-shaped but both apodemes very short; praegonite elongate, with 4 spines on ventral side; postgonite semicircular, with a papilla; lateral sclerites of aedeagus smooth but each with 3 distinct teeth on ventral side; aedeagal apodeme very short and slender.

Body length 3.0 (holotype)-3.2 (♀) mm, wing length 2.3-2.8 (♀), 2.6 (holotype) mm.

Holotype ♂, FRIM, Kepong, Selangor, Malaya, 7. VIII. 1986 (M.S.). Paratypes: 1♀, same data as holotype; 1♂, FRIM, 21. VIII. 1986 (M.S.); 1♂, Pasoh Forest Reserve, Negeri Sembilan, Malaya, 9-13. VIII. 1986 (M.S.)

Distribution. Malaya.

29. *Homoneura* (*H.*) *discoalbata* n. sp.

Diagnosis. This new species is unique in the whitish broad median vitta and brown lateral vittae on mesonotum.

Discussion. In the bicolor mesonotum or in the wing pattern this new species is somewhat similar to *discoglauca* (Walker) and *strigata* (de Meijere). However, *discoglauca* is fuscous, and with clear wings. In *strigata* the mesonotum is octovittate.

Female. Pale yellow; frons, face, gena and thoracic pleura densely whitish pollinose; occiput with pale brown transverse band, extending laterally to dorsal postorbits; antenna orangish yellow, segment 3 faintly brownish on apicoventral third, arista brown; palpus black on apical 1/2. Mesonotum distinctly pruinose between lateralmost (3rd) rows of *acr*, with lateral sides between *dc*-lines and *prs*- and *sa*-lines pale brown, but darkened distinctly between lateralmost *acr*-rows and *dc*-lines and on *prs*-line before suture, the former dark stripe broadened behind 2nd *dc* and extended just before base of apical *sc*; scutellum concolorous with mesonotum mesally, apical and marginal *sc* growing at edge of yellow area; postnotum with brown vittae on lateral sides. Wing brown-spotted: basal elongate

marking in cell R_1 extending basally almost to humeral vein and connected posteriorly with small spot on base of R_{4+5} and with large one over r-m ; apical marking on R_{2+3} almost as wide as basal one in cell R_1, fused with apical markings on R_{4+5} (2/5 length of ultimate section of its vein) and M_{1+2} (3/4) into one but hyaline on apex of R_{2+3} and between apices of R_{4+5} and M_{1+2} in oval form ; a small circular spot (1st) on R_{4+5} laterad of r-m isolated but the 2nd connected anteriorly with apical spot on R_{2+3} ; L-shaped spot around m-m and on apical part of M_{3+4} ; faintly fuscous between basal and apical markings in cell R_1 (on level of 1st spot on R_{4+5}) and between apical marking on M_{1+2} and posterior margin of wing ; legs yellow. Abdomen brown except T1-2 largely yellow, T3-6 with median fasciae and posterior margins yellow.

Frons slightly wider than long, about 1.5 times as wide as eye, almost parallel-sided ; lower *or* slightly longer than 2/3 of the upper ; *oc* only a little longer than lower *or* ; eye slightly higher than broad ; face flat ; gena 1/7 height of eye ; *pm* 7-8, short ; antennal segment 3 1.5 times as long as wide, narrowing apically ; arista plumose, with dorsal longest hair slightly longer than width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* just behind suture, 6 rows of *acr*, *prsc* long but shorter than 1st *dc* ; C-index 3.1-3.6, 4V-index 1.5, 5V-index 0.13, r-m slightly beyond middle of discal cell ; f_1 with 3 *pv*, f_2 with 4-5 *a* ; t_2 with 1 long, 1 short and 1 minute spurs, t_3 with *pd* short.

Body and wing length 3. 1 mm, respectively.

Holotype ♀, FRIM, Kepong, Selangor, Malaya, 21. VIII. 1986 (M.S.).

Distribution. Malaya.

30. *Homoneura* (*H.*) *discoglauca* (Walker)

Ochthiphila discoglauca Walker, 1860 : 147.
Lauxania viatrix de Meijere, 1910 : 123.

This medium-sized, fuscous and clear-winged species is distinct by the following characteristics : whitish-gray pruinose head, median mesonotal vitta, which is extended to scutellum, and narrow stripes ventrad of *sa*-lines ; narrow whitish-gray stripes along dorsal margin of mesopleuron and broad one ventrad of *mp* ; yellow posterior margins on scutellum and T2-6 which are whitish-fasciated centrally on T2 (3)-5 and entirely pruinose on T6 ; wings 2.8-3.2 mm long. See Sasakawa's paper (1982) on other characters.

Specimens examined. MALAYA : 1♂, Port Dickson, Negeri Sembilan, 14-17. VIII. 1986 (M.S.) ; 1♀, Bkt. Bakar, nr. Machang, Kelantan, 9. IX. 1990 (M.S.) ; 1♂, Telok Chempedak, Kuantan, Pahang, 18-21. IX. 1990 (M.S.) ; 2♂, Kampong Tekek & Kampong Lalang, Pulau Tioman, Pahang, 13-14. IX. 1990 (M.S.).

Distribution. Celebes, Java, Krakatau, Lombok, Malaya, Formosa, Japan (Ryukyus) ; Solomon Is. New to Malaya.

31. *Homoneura* (*H.*) *fasciventris* Malloch

Homoneura fasciventris Malloch, 1927 : 169.

This species is similar to *beckeri* (Kertész) in the bicolor frons (parafrontalia brown, frontalia yellow) and scutellum, and whitish-gray pollinose thorax (fuscous in ground color) excepting humerus, posteroventral half of mesopleuron and pteropleuron yellow. It differs from *beckeri* in the entirely yellow face and blackish brown posterior bands on yellow T3-5 ; in *beckeri* face with a brown transverse band or a pair of spots at middle, and central fasciae on T separated from transverse posterolateral bands. Posterior band is broadest (4/5 of tergal length) on T3 and narrowest (1/3) on T5, and triangularly produced forward in center of T4-5 ; T2 or T1-2 with bands laterally only ; T6-9 yellow. Wings are 3-3.8 mm long and clear.

Protandrium ringed ; S4-6 each 1.3 times as wide as long ; surstylus, hypandrium and praegonite similar to those of *beckeri* in shape (Fig. 19), but postgonite absent, aedeagus with bifurcated sclerite ventrally and 2 pairs of spine-like processes on dorsal and ventral membranous parts ; ejaculatory apodeme 110 μm long.

Specimens examined. MALAYA : 1♀, Connaught Bridge, 9 m, 14. III. 1958 (T.M.) ; 1♀, FRIM, Kepong, Selangor, 12. III. 1958, at light (J.S.) ; 1♂, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.). SABAH : 1♂3♀, 8 mil. N. of Poring Hot Spring (500 m), Ranau, 8-18. X. 1958 (L.Q.) ; 1♂, Gomantong Caves, 22-26. XI. 1958 (T.M.) ; 1♂, Keningau, 12-17. I. 1959 (T.M.) ; 1♂, Singkor, 19. I. 1959 (T.M.) ; 2♂1♀, Bundu Tuhan, 18. II. 1959 (T.M.) ; 1♂2♀, Ranau, 22-25. II. 1959 (T.M.) ; 1♀, Kalabakan, primary forest, 15. XI. 1958 (T.M.). SARAWAK : 1♂2♀, Santubong, Kuching, 18-30. VI. 1958 (T.M.) ; 3♂1♀, Kampong Tapuh (300-450 m), Sadong, 4-9. VII. 1958 (T.M.) ; 1♂1♀, Nanga Pelagus, nr. Kapit, 7-14. VIII. 1958 (T.M.) : 1♂2♀, Bidi (90-240 m), 2-3. IX. 1958 (T.M.) ; 1♀, Pengkalan Tebang (300-450 m), 6. IX. 1958

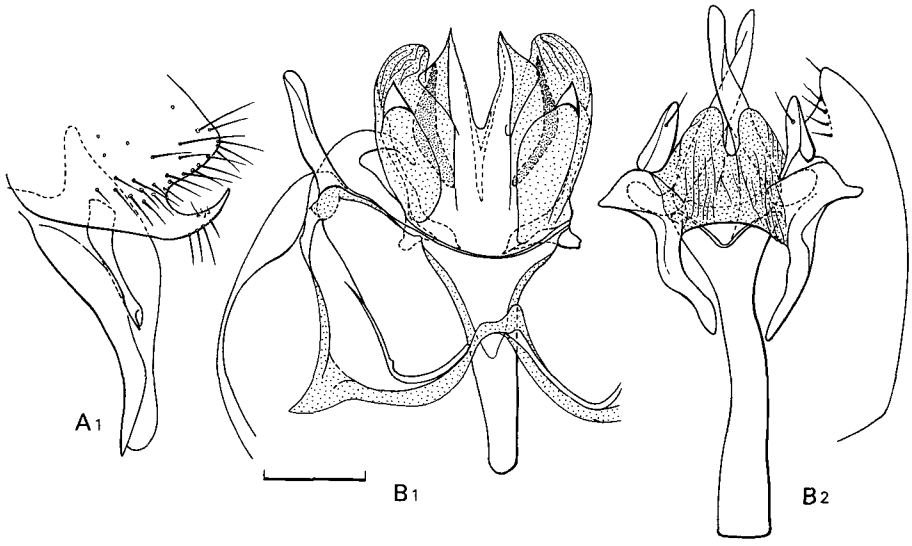

Fig. 19. *Homoneura* (*H.*) *fasciventris* Malloch-A_1, B_1 ; *H. forcipata* (Kertész)-B_2.

(T.M.).

Distribution. Formosa, Malaya, Borneo (Sabah, Sarawak). New to Malaya and Borneo.

Remarks. The wings are usually tinged with brownish yellow laterad of forking point of Rs and hyaline proximad of that; infuscation is variable between forking point of Rs and r-m, and on both extremities of tibiae.

32. *Homoneura* (*H.*) *folifera* Malloch

Homoneura (*Homoneura*) *folifera* Malloch, 1927: 110.

This subshining black species is characterized by the wing (3.7-4 mm long) faintly fulvescent and only infuscated at base, and by the surstylus separated from epandrium and consisting of 2 processes. There is a distinct difference between *folifera* and *trispina* in the structures of male genitalia.

Protandrium ringed, as long as epandrium dorsally, sternite consisting of 2 narrow sclerites which are as long as tergal length; S5 1.5 and S6 1.7 times as wide as long, the latter excavated at middle of posterior 2/5; epandrium (Fig. 20) with a pair of semicircular processes anterodorsally and narrow cleft just above anteroventral corner, and minutely spinulose on posteroventral corner; surstylus with posterior process more or less angulated at middle, minutely spinulose on posterobasal papilla and sparsely setulose on lateral side, and with anterior process lobate in lateral view, incurvated distally and pointed on anterior tip; hypandrium Y-shaped, with basal stem very broad; praegonite surrounded by 2 narrow lateral sclerites; postgonite about thrice as long as praegonite; aedeagus with lateral sclerites smooth; aedeagal apodeme slightly longer than aedeagus; ejaculatory apodeme 110 μm long.

Female S7-8 each quadrate, twice as wide as long; S9 pentangular but excavated triangularly on posterior 1/3; S10 rhombic; egg-guide (Fig. 21) well sclerotized; spermathecae orbicular, larger one 100 μm and 2 small ones 70 or 80 μm in diameter.

Specimens examined. MALAYA: 6♂1♀, Kampong Tekek, Pulau Tioman, Pahang, 13. IX. 1990 (M.S.); 5♀, Telok Chempedak, Kuantan, Pahang, 18-21. IX. 1990 (M.S.): 6♂1♀, FRIM, Kepong, Selangor, 23-25. IX. 1990 (M.S.).

Distribution. Sumatra, Malaya. New to Malaya.

33. *Homoneura* (*H.*) *forcipata* (Kertész)

Lauxania (*Minettia*) *forcipata* Kertész, 1913: 100.

This yellow to pale testaceous species is distinct in the short lower *or*, plumose arista (longest hair 3/4 to as long as width of segment 3), short *oc* (about 1/2 of lower *or* which is 3/5-4/5 of the upper), clear wing (2.7 mm long) and the presence of a pair of large round spots on sublateral sides of T5.

Protandrium horseshoe-shaped, with dorsal apodeme short; S5-6 each twice as wide as long; epandrium with surstylus only slightly projected on anteroventral corner; cercus small, 1/4 height of epandrium; hypandrium (Fig. 19) H-shaped but distal apodemes very short and projected laterally; praegonite with a seta before

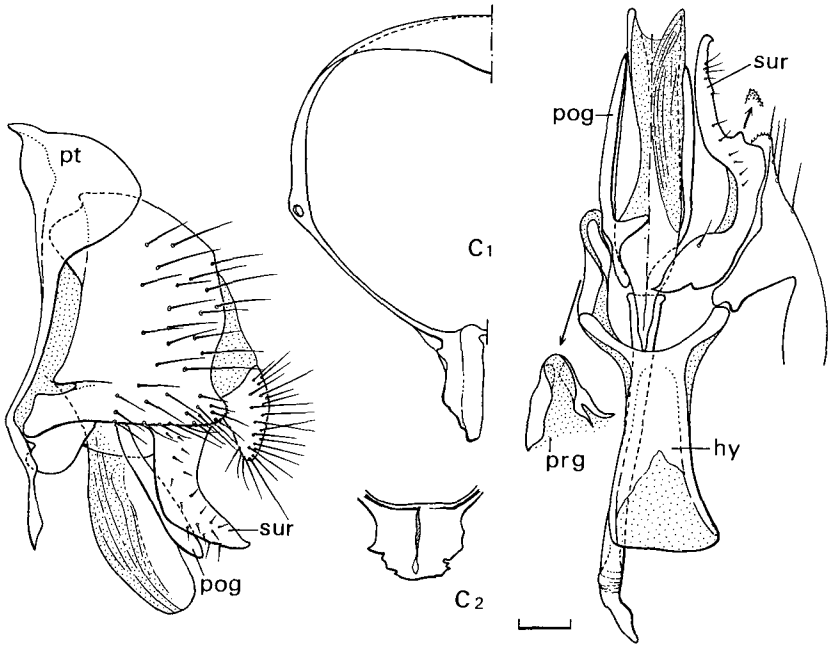

Fig. 20. *Homoneura* (*H.*) *folifera* Malloch. C_1, *folifera*; C_2, *trispina*. See Figs. 2, 4.

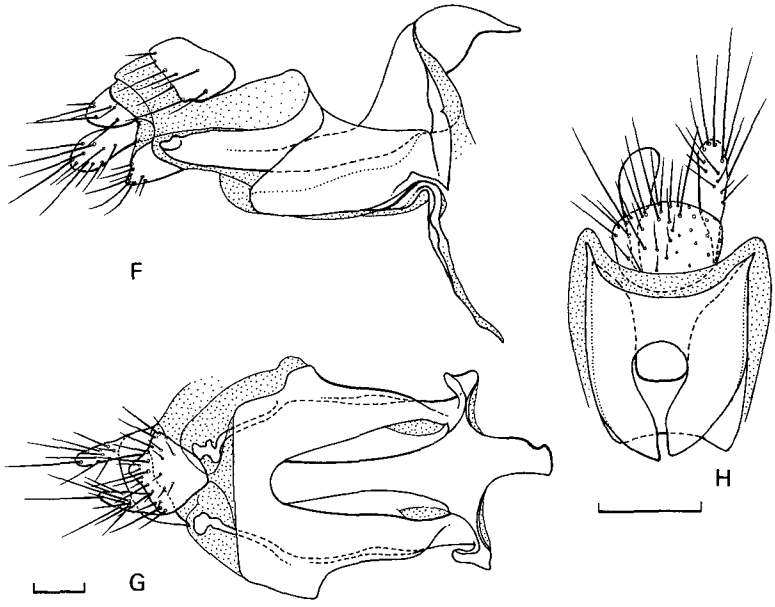

Fig. 21. Female terminalia of *Homoneura* (*H.*) *folifera*-F, lateral & G, ventral views; *signata*-H, ventral view.

apex, postgonite absent; aedeagus with lateral sclerites decussate; aedeagal apodeme 1.3 times as long as aedeagus; ejaculatory apodeme about 50 μm long.

Specimens examined. MALAYA: 1♀, Kuala Tahan, primary forest, 12-14. XII. 1958 (T.M.): 1♂1♀, Kuala Tahan, Pahang, 15-16. XII. 1958 (L.Q.); 2♀, Penang, 22-26. XII. 1958 (L.Q.); 2♀, Kuala Lumpur, 24-31. XII. 1958 (L.Q.); 4♀, Klang gates, Kuala Lumpur, 31. XII. 1958 (L.Q.); 1♀, Fraser's Hill, 1,300 m, 16. III. 1966, at light (J.S.).

Distribution. Formosa, Malaya. New to Malaya.

34. *Homoneura* (*H.*) *geomyzina* (Frey)

Mallochomyza geomyzina Frey, 1927: 33.

This testaceous yellow species is characterized by: presence of 2 pairs of bristle-like *acr* (presutural one just before suture, postsutural one before level of 2nd *dc*, each distinctly longer than *prsc*); maculate wing (anterior margin from costal cell to basal 3/5 of cell R_1 infuscated; 2 conspicuous markings on apices of R_{2+3}, R_{4+5} and M_{1+2}, of which apical ones on R_{4+5} and M_{1+2} are usually separated by a subhyaline line; wing tip between R_{4+5} and M_{1+2} narrowly subhyaline; marking over m-m extended anteriorly beyond middle of cell R_5 and posteriorly to posterior

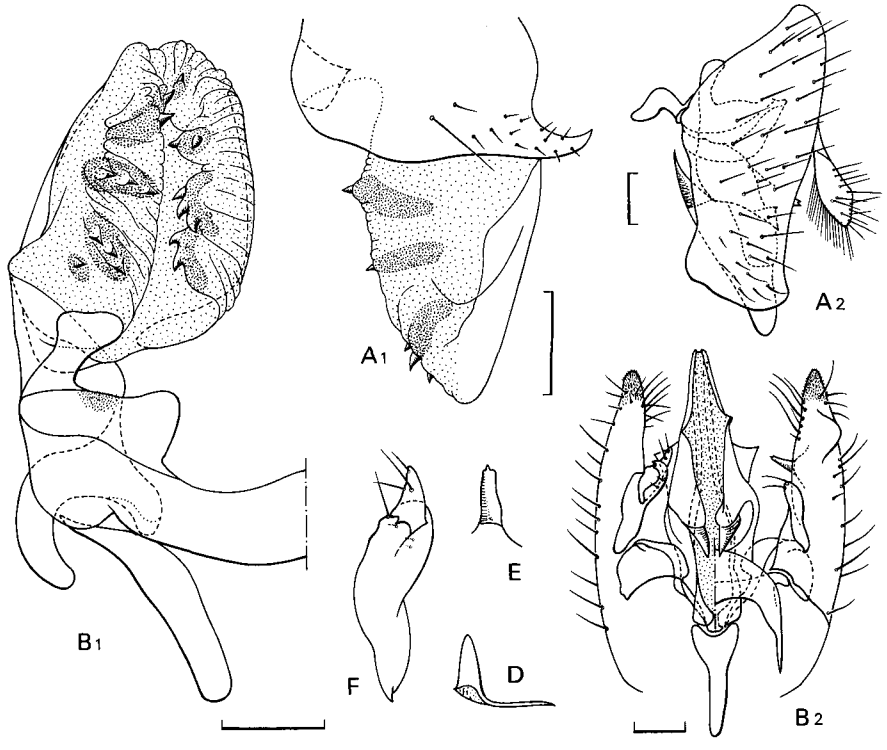

Fig. 22. *Homoneura* (*H.*) *geomyzina* (Frey)-A_1, B_1; *H. gibbosa* n. sp.-A_2, B_2, D, E, surstylus, F, postgonite, anterior view.

margin of wing through ultimate section of M_{3+4}) and the presence of a pair of shiny, quadrate spots on dorsal side of T5.

Protandrium horseshoe-shaped, with several pairs of setae on posterodorsal side; S5 slightly narrower than long, S6 as wide as long; surstylus (Fig. 22) claw-like, hairy; hypandrium bridge-like, with a patch of minute setulae on each postero-lateral ends; praegonite small, postgonite absent; aedeagus long, with 4 pairs of spinose plates on ventral membrane, and more than twice length of aedeagal apodeme.

Specimens examined. MALAYA: 1♂, nr. Kuala Lumpur, Selangor, 9. IX. 1958 (J.G.); 1♂, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.); 1♀, FRIM, Kepong, Selangor, 7. VIII. 1986 (M.S.). SABAH: 1♀, Tenompok, 48 km E. of Jesselton (Kota Kinabalu), 2. X. 1958, at light (L.Q.); 1♂, Sepilok Forest Reserve, 27. X. 1957 (J.G.); 1♂, Kalabakan River, 48 km W. of Tawau, 9-18. XI. 1958 (T.M.); 1♀, Forest camp, 19 km N. of Kalabakan, 11. XI. 1962 (K.K.). SARAWAK: 2♂2♀, SW. of Tapuh, 4-9. VII. 1958 (T.M.); 11♂8♀, Kampong Tapuh (300-450 m), Sadong, 4-10. VII. 1958 (T.M.); 4♂, Merirai Valley, Kapit Distr., 28-31. VII. 1958 (T.M.); 3♂1♀, Bidi, secondary forest, Bau Distr., 3. IX. 1958 (T.M.); 2♂1♀, Pengkalan Tebang, Bau Distr., 5-6. IX. 1958 (T.M.).

Distribution. Philippines, Malaya, Borneo (Sabah, Sarawak). New to Malaya and Borneo.

35. *Homoneura* (*H.*) *gibbosa* n. sp.

Diagnosis. This small yellowish species is unique in the structures of male genitalia: a gibbosity occurring on anteroventral corner of epandrium, short and erect surstylus on inner side of epandrium, and a pair of stout processes on antero-ventral side of aedeagus. In the wing pattern it is quite similar to *dentata* n. sp. and *beccarii* (Kertész), known from Indonesia (Irian Jaya), but it is bivittate on mesonotum, thus differing from the related species.

Male and female. Yellow; head whitish pollinose, ocellar triangle and small area of occiput pale brown; face with lateral margins linearly brown; antenna ocherous, segment 3 of female tinged with brown excepting base; palpus yellow. Thorax and abdomen pale testaceous yellow; mesonotum densely whitish pollinose excepting a pair of pale brown median vittae (each nearly 1/4 as wide as width between *dc*-lines) just mesad of *dc*-lines, *prsc* on vitta; pleura with indistinctly brownish vitta before base of *prs* and along ventral margin of notopleuron, and pale brown stripes at middle of mesopleuron and along dorsal margin of sternopleuron; female T2-3 with anterior 1/2, T4 with anterior 1/3 and T5 largely brown, T6 yellow. Wing hyaline, faintly tinged with brownish gray, with brown spots: on apices of Sc and R_1, over both crossveins (marking over m-m spread posterolaterally on about distal 1/3 of M_{3+4}), and on apex of R_{2+3} and before apices of R_{4+5} and M_{1+2} (fused with each other into a single large marking, broadest on R_{4+5}); calypter with fringe pale brown; halter yellow. Legs entirely yellow.

Frons almost as wide as long, 1.2 (♂)-1.5 (♀) times as wide as eye, almost parallel-sided; *or* subequal to each other; *oh* 1; *oc* 2/3 of lower *or*; face slightly swollen centrally, beyond parafacialia in profile; eye slightly higher than broad; gena 1/8 height of eye; *pm* 5-7, short; antennal segment 3 about twice as long as

wide, narrowing apically; arista plumose, with dorsal longest hair only about 1/2 width of segment 3.

Mesonotum with 0+3 *dc*, 6 rows of *acr* before level of 2nd *dc* but 4 behind that, *ipa* 1/3-1/2 of *opa*; anterior *sp* slightly shorter than posterior; C-index 2.9-3.2, r-m at or slightly beyond middle of discal cell, 4V-index 1.7-1.9, 5V-index about 0.2; f_1 with 3 *pv*, f_2 with 4-6 *a*; t_2 with 1 long and 1 or 2 minute spurs, t_1 and t_3 with *pd* short.

Male T5-6 with marginal bristles arranged remarkably densely on lateral sides; S6 with a pair of long bristles on posterolateral corners. Protandrium horseshoe-shaped, about 3.5 times as long as epandrium on dorsal side, with setae scattered on posterodorsal half; epandrium (Fig. 22) with a gibbosity on inner side near antero-ventral corner; surstylus short and erected on inner side of epandrium; hypandrium U-shaped; praegonite with 2 setae on tip; postgonite bifid, of which posterior one claw-like; aedeagus with a pair of sharply pointed and forwardly directed processes at middle of ventral side; aedeagal apodeme 2/5 length of aedeagus; ejaculatory apodeme 25 μm long.

Body and wing length 2.3 (♀)-2.7 (♂) mm, respectively.

Holotype ♀, Telok Chempedak, Kuantan, Pahang, Malaya, 18-19. IX. 1990 (M.S.). Paratype ♂, same data as holotype.

Distribution. Malaya.

36. *Homoneura* (*H.*) *hamulifera* n. sp.

Diagnosis. This testaceous species is distinct in having the blackish triangles laterad of ventral parafrontalia, bicolor antennal segment 3, and elongate clouds on apices of R_{2+3} and R_{4+5} connected with each other. Elongate surstylus is also found in *quiquenotata*, but the hypandrium, praegonite and aedeagus of *hamulifera* are evidently different from those of *quiquenotata* in shape and structure.

Male and female. Testaceous; frons and face sparsely gray dusted, frontalia with a pair of pale brown narrow stripes in a form of V and a pair of blackish triangles between parafrontalia and eye, extending from level of upper *or* to that of antennal bases; parafacialia densely whitish pollinose; face pale brown but yellow along ventral margin; antennal segment 3 blackish on apical 1/2, arista brownish; palpus testaceous yellow. Mesonotum gray dusted; legs brownish yellow; T3-6 and cercus brown excepting anterior 1/3 of T3-5. Wing very faintly tinged with brown, with anteroapical cloud including apical 3/5 of R_{2+3} and apical 3/4 of ultimate section of R_{4+5} (basal extremity of cloud at middle between both crossveins) distinctly brown and connected posteriorly with spot over m-m, distinctly spotted on r-m, apical 2/3-3/4 of ultimate section of M_{1+2} very faintly clouded.

Frons 1.3-1.5 times as wide as its length or width of eye, slightly diverging ventrally; lower *or* almost 2/3 of the upper; *oc* slightly longer than lower *or*; eye slightly higher than wide (2 : 1.7); face rather distinctly convex on ventral half; gena 1/5-1/6 height of eye; *pm* 6-8, short; antennal segment 3 about twice as long as wide, narrowing apically, arista with dorsal longest hair nearly twice as long as width of segment 3.

Mesonotum with 0+3 *dc*, 10 rows of *acr*, *prsc* subequal to 1st *dc*; C-index 2.9 (2.8-3.1), r-m at middle of discal cell, 4V-index 1.5-1.7, 5V-index 0.15 (0.13-0.17); f_1

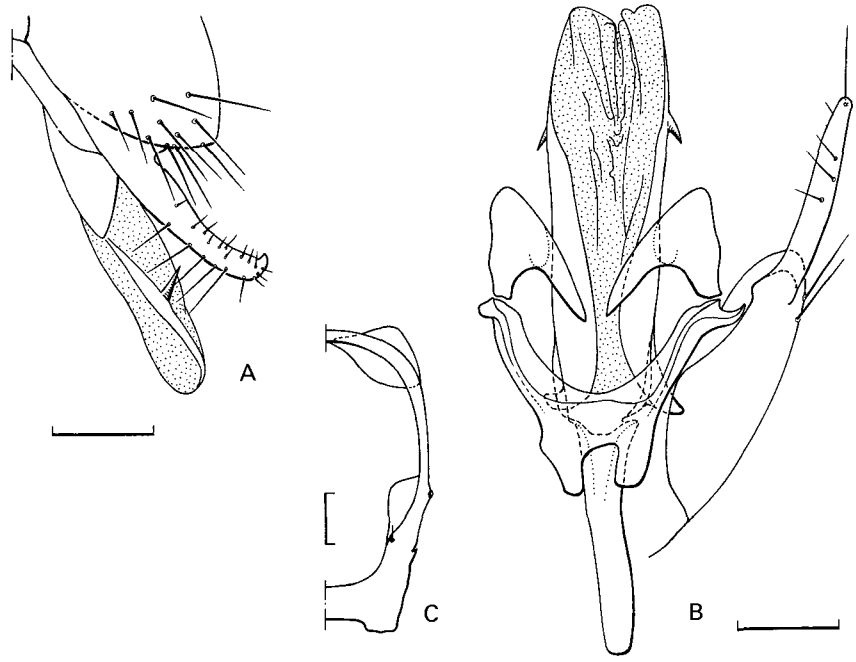

Fig. 23. *Homoneura* (*H.*) *hamulifera* n. sp. C, right half of protandrium, posterior view.

with 3 *pv*, f_2 with 5 (4-6) *a* ; t_3 with 3 (1 long and 2 short) spurs, t_3 with *pd* minute, less than 1/2 of t_1 *pd*.

Protandrium (Fig. 23) ringed, with ventral bridge broad ; S5-6 each 1.6 times as wide as long ; surstylus on anteroventral corner of epandrium long, bearing a row of long setae on ventral side ; hypandrium H-shaped, with distal apodemes divergent posteriorly ; praegonite large, hooked ventrally ; postgonite absent ; aedeagus narrow, with a tooth on distal 1/3 of each lateral sclerite ; aedeagal apodeme nearly 1/2 of aedeagus ; ejaculatory apodeme about 70 μm long.

Body length 3.8 (holotype)-5.3 (♂) mm, wing length 3.1 (holotype)-4.8 (♂) mm.

Holotype ♀, Forest camp, 19 km N. of Kalabakan, Sabah, Borneo, 29. X. 1962 (K.K.) (BISHOP 15067). Paratypes : 8♂27♀, same locality as holotype, 8, 13, 15-17. & 19. X. and 4. XI. 1962 (K.K.).

Distribution. Borneo (Sabah).

37. *Homoneura* (*H.*) *hypopygialis* n. sp.

Diagnosis. This shiny, testaceous species is characterized by the short lower *or*, apically black antennal segment 3 and brownish bivittate mesonotum, and by lacking *pd* on t_3. Male has extremely long *pv* on f_2 and *av* on f_3, and a carina on dorsodistal surface of t_3 ; the hypandrium is peculiar in shape, and the aedeagus is ventrally spinose.

Discussion. This is one of the species without t_3 *pd*, but it differrs from the species of *atriceps*-group by its entirely testaceous yellow scutellum and from

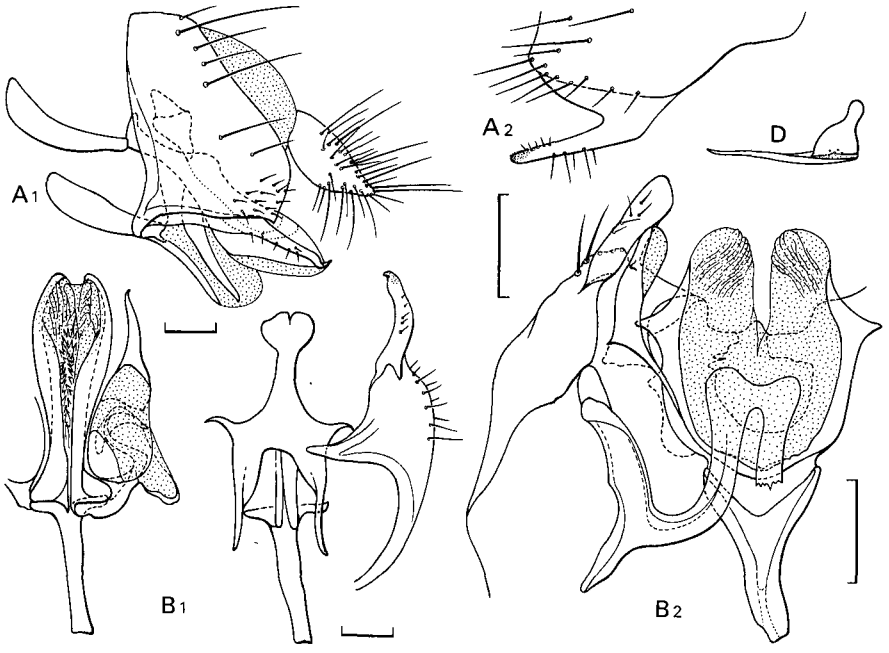

Fig. 24. *Homoneura* (*H.*) *hypopygialis* n. sp.-A_1, B_1 ; *H. immaculata* (de Meijere)-A_2, B_2, D.

demeijerei Malloch by its bivittate mesonotum.

Male and female. Testaceous; face, gena, occiput, thoracic pleura, coxae, femora and tibiae yellow; frons and face sparsely pollinose, the former with a pair of pale brown stripes which are extended from lateral sides of ocellar triangle to its anterior margin, the latter shining; gena whitish pruinose; antennal segment 3 brownish black on apical 3/5-3/4, arista brown; palpus yellow, with tip brown. Thorax and abdomen sparsely gray dusted; mesonotum shining, with a pair of pale brown vittae between *dc*-lines (rarely indistinct), becoming paler before suture and usually ending at middle between anterior gibbosity and suture, posteriorly fused with each other into vitta before *prsc*; T2-5 brownish, owing to internal contents; cercus brownish black. Wing hyaline, very faintly tinged with brownish yellow, faintly clouded around m-m; calypter with margin yellowish brown, fringe yellowish; halter yellow.

Frons slightly wider than long (1.2 : 1), and than eye, slightly diverging ventrally; lower *or* about 1/2 of the upper; *oh* 1-2 between *or*; *oc* subequal to lower *or* in length; occiput with a patch of black setulae; face almost flat; eye slightly higher than broad; gena 1/7-1/9 height of eye; *pm* 4-7, short; antennal segment 3 a little more than twice as long as wide, narrowing apically; arista plumose, with dorsal longest hair 1.6-2.0 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, 10 rows of *acr* anteriorly but 8 rows posteriorly, *prsc* shorter than *ipa* which is about 3/5 of *opa*; C-index 2.9-3.5, r-m at or a little beyond middle of discal cell, 4V-index 1.7-2.0, 5V-index 0.15-0.19; f_1 with 3 (rarely 4) *pv*, f_2 with 4 or 5 *a*; t_2 with 1 long and 2 minute spurs, t_3 *pd* absent. Male f_2 with 3 long

pv on basal half, f_3 with a long *av* just distad of middle, t_3 carinated dorsally on distal 1/3-1/4.

Protandrium ringed but narrowly separated on ventromedian line, as long as epandrium on dorsal side, ventrally with a pair of weakly sclerotized lobes; S5-6 each about 1.7 times as wide as long and with a pair of long bristles on posterolateral corners. Epandrium (Fig. 24) with 2 pairs of long bristles on dorsal side; surstylus separated from epandrium, narrow cylindric, shortly upturned on tip, sparsely hairly on ventral side and spinulose before ventral tip; hypandrium U-shaped but with distinct apodeme posteriorly and bulbous at end; praegonite well developed, postgonite slender; aedeagus with inner and lateral sclerites well developed, spinose centrally on ventral membrane; aedeagal apodeme shorter than aedeagus; ejaculatory apodeme 70 μm long.

Body length 3.6 (♂)-4.7 (♀), 3.8 (holotype) mm; wing length 3.2 (♂)-3.7 (♀), 3.4 (holotype) mm.

Holotype ♂, FRIM, Kepong, Selangor, Malaya, 21. VIII. 1986 (M.S.). Paratypes: 3♂3♀, same locality as holotype, 5-6. VIII. 1986 and 23-25. IX. 1990 (M.S.); 1♂, Telok Chempedak, Kuantan, Pahang, Malaya, 18-21. IX. 1990 (M.S.).

Distribution. Malaya.

38. *Homoneura* (*H.*) *immaculata* (de Meijere)

Lauxania immaculata de Meijere, 1910: 78.

This is one of the species of *fasciventris*-group in the bicolor head and body, 8 rows of *acr*, and W-shaped hypandrium. It is specific in the bluish gray dusted mesonotum and brownish black T1-5 (except linearly yellow posterior margin).

Other characteristics are as follows: head yellow, parafrontalia and antennal segment 2 brown; mesonotum and scutellum excepting margin dark brown to black; pleura yellow to plae testaceous; legs yellow, t_1 with brown spots on apices of inner and outer sides, t_3 with spot on ventral side near base; T6-9 and S1-7 testaceous yellow.

Protandrium ringed, as long as epandrium in dorsal side, with sternite horizontal; S5-6 each about 1.5 times as wide as long, S7 semicircular and united with S6 at middle; epandrium with surstylus (Fig. 24) long, cylindric, with short setae on ventral side and minutely setulose near dorsal tip; praegonite with a minute process at distal 1/3, postgonite absent; aedeagus with lateral sclerites pointed laterally before apices and each projected mesally before end of dorsal side; aedeagal apodeme about 3/5 of aedeagus; ejaculatoy apodeme 50 μm long.

Specimens examined. MALAYA: 4♂1♀, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.).

Distribution. Java, Malaya. New to Malaya.

39. *Homoneura* (*H.*) *laticosta* (Thomson)

Geomyza laticosta Thomson, 1869: 598.
Sapromyza singaporensis Kertész, 1900: 261.

This testaceous species was recorded from Malacca and Singapore. Wing 2.7-

3.3 mm long, pale brown along anterior margin, extending posteriorly to R_{4+5} or beyond apex of R_{4+5}, and clouded over m-m. T5-6 each with 3 pairs of extremely long and erect marginal bristles on dorsal and sublateral sides; protandrium ringed; S4-5 each 1.3, S6 1.5 times as long as wide; surstylus (Fig. 25) more or less curved ventrally in lateral view, ending into a minute papilla; hypandrium H-shaped but both apodemes short; praegonite largely membraneous, postgonite absent; aedeagus with lateral sclerites protruded dorsolaterally at basal 2/5, longer than aedeagal apodeme; ejaculatory apodeme 50 μm long.

Specimens examined. MALAYA: 7♂8♀, FRIM, Kepong, Selangor, 5 & 23. VIII. 1986 (M.S.); 1♂1♀, FRIM, 4. X. 1988 (M.S.); 6♂4♀, FRIM, 23-25. IX. 1990 (M.S.); 1♂1♀, Berinchang, Cameron Highlands, 28. VIII. 1986 (M.S.); 11♂4♀, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (T.M.); 1♂, Templer Park, 20 km N. of Kuala Lumpur, 15. IX. 1961 (K.K.); 34♂21♀, Kuala Tahan, Pahang, 12-14. XII. 1958 (T.M.); 8♂5♀, Kuala Tahan, 15-16. XII. 1958 (L.Q.); 2♂1♀, Kuala Terengganu, 15. XII. 1958 (J.G.); 1♂, Kampong Tekek, Palau Tioman, Pahang, 13. IX. 1990 (M.S.); 2♀, Kampong Lalang, Pulau Tioman, 14. IX. 1990 (M.S.); 1♀, Bkt. Bakar, nr. Machang, Kelantan, 9. IX. 1990 (M.S.); 1♂1♀, Pengarang, Johor, 11. XII. 1961 (K.K.). SABAH: 4♂, Ranau, 30. IX.-5. X. 1958 (T.M.); 7♂13♀, Tawau, 48 km W. of Kalabakan, Tawau Residency, 9-18. IX. 1958 (T.M.) 3♂1♀, Kota Kinabalu, 27. IX. & 4. X. 1988 (M.S.); 10♂11♀, Kundasang, 30. IX. 1988 (M.S.); 6♂, Forest Research Center, Sepilok, 6. X. 1988 (M.S.); 2♂9♀, Sandakan, 10. X. 1988 (M.S.). SARAWAK: 17♂7♀, Nanga Pelagus, nr. Kapit, 7-14. VIII. 1958 (T.M.); 69♂64♀, Lake Area, Bau, Bau District, 29-30. VIII. 1958 (T.M.); 7♂11♀, Bidi, Bau Distr., 31. VIII. 1958 (T.M.).

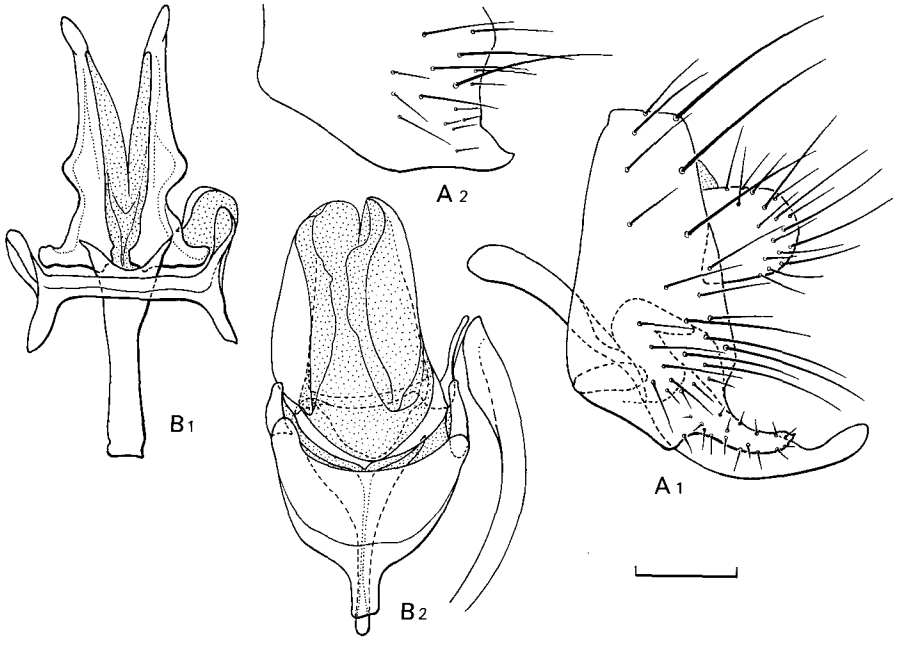

Fig. 25. *Homoneura* (*H.*) *laticosta* (Thomson)-A_1, B_1; *H. lucida* (de Meijere)-A_2, B_2.

Distribution. Malaya, Thailand, Java, Borneo (Sabah, Sarawak), Philippines; Solomon Is. New to Borneo.

Remarks. Anterior marginal and m-m markings are sometimes very faint or quite absent; lower *or* is 1/2 to 2/3 length of the upper.

40. *Homoneura* (*H.*) *lucida* (de Meijere)

Lauxania lucida de Meijere, 1910: 132.

This testaceous yellow species is characterized by the sparse rows (6) of *acr*, short lower *or* (1/2 of the upper) and clear wing (2.2-2.3 mm long). Other characteristics are as follows: parafacialia distinctly whitish pruinose; antennal segment 3 about twice as long as wide and distinctly narrowed toward apex, arista with dorsal longest hair slightly longer than width of segment 3; 1st *dc* very close to suture; C-index 2.5; all t with *pd*; protandrium horseshoe-shaped; surstylus (Fig. 25) small; hypandrium somewhat Y-shaped, broadened posteriorly; prae- and postgonites each small; aedeagus with lateral sclerites smooth, distinctly longer than aedeagal apodeme; ejaculatory apodeme 25 μm long.

Specimens examined. MALAYA: 1♂2♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-14. XII. 1958 (J.G.).

Distribution. Java, Philippines, Malaya, Ceylon, India. New to Malaya.

41. *Homoneura* (*H.*) *malayensis* n. sp.

Diagnosis. This new species has 2 dark bands on face, quinquevittate mesonotum, largely spotted wings and short surstylus.

Discussion. The wing pattern of this species is similar to that of *striatifrons* (de Meijere, 1924), but *malayensis* differs in the dark antennal segment 3, coxae and femora in addition to marking along penultimate section of M_{3+4}. It differs from *quinquevittata* (de Meijere) by the coloration of face and pleura, and the structure of male genitalia.

Male and female. Head yellow; frons and face sparsely gray dusted; frontalia with a pair of brown stripes along inner margins of parafrontalia on dorsal 4/5, connected with dorsal square patch of occiput through bases of *pvt*; face with brownish black bands along dorsal and ventral margins, both connected laterally with black lines along its lateral margins; parafacialia with pale brown triangular spot laterad of antennal base; gena whitish pollinose; antenna pale testaceous but segment 3 brown excepting base narrowly, arista brown except base yellowish; palpus yellow, brown-tinged on tip. Mesonotum, humerus and scutellum testaceous yellow, very sparsely gray dusted; mesonotum quinquevittate: median fuscous vitta broad, about 4/5 as wide as width between anterior *dc*, extending to scutellum and indistinctly separated by central *acr*-lines on its anterior half; lateral ones from anterior margin above humeri to posterolateral corners of notum, *prs* and *opa* growing on ventral edge and *sa* on dorsal edge of vitta; a pair of pale brown vittae from transverse suture to hind margin of notum between median and lateral vittae, *ipa* on vitta; scutellum with brownish spots on lateroproximal corners but both *sc* on yellow lateral margins; pleura brown, gray dusted, dorsal 2/3 of propleuron,

anterodorsal corner of notopleuron and ventral margin of pteropleuron yellow; sternopleuron with a yellowish spot just above mid coxa; pleurotergite brown; postnotum brown dorsally but yellowish ventrolaterally. Wing faintly tinged anteriorly with yellow, with large dark brown markings: basal one around forking points of Rs and M (basal 1/4 of discal cell) connected with median long stripe along penultimate section (about proximal 4/5) of M_{3+4}; submedian one around r-m, extending anteriorly to costa including apex of cell Sc (about 1/4 as wide as length of cell R_1); apical one largest, being 2/5 as wide as length of wing, with its basal extremity at level of distal 1/2 of R_{2+3}, connected with broad fascia on m-m through preapical spot at middle of ultimate section of R_{4+5}, and with 2 hyaline streaks extended from apex of R_{2+3} to cell R_5 (suboval hyaline spot) and shortly stretched across basal 1/3 of ultimate section of M_{1+2}; apical wing margin between apices of R_{4+5} and M_{1+2} linearly hyaline; calypter with margin and fringe brown; halter yellow. Legs with coxae and femora brown, tibiae and tarsi yellow, but both ends of tibiae narrowly infuscated, especially distinctly on proximal ends of t_2 and t_3. Abdomen testaceous yellow, T2-5 with brown posterior margins, T3-5 (♂) or 4-6 (♀) each with narrow median stripe pale brown and connected anteriorly with pale transverse band, T6 (♂) entirely brown; epandrium brown except dorsal side yellow.

Frons slightly wider than long, 1.4 times as wide as eye, slightly converging ventrally, bearing minute setulae on anterior 1/3; lower *or* 3/4 of the upper; *oc* slightly longer than lower *or*; face almost flat; eye as high as wide; gena 1/8-1/10 height of eye; *pm* 7-8, very short; antennal segment 3 about twice as long as wide, slightly narrowing apically; arista plumose, with dorsal longest hair as long as width of segment 3; palpus with apical seta longer than others.

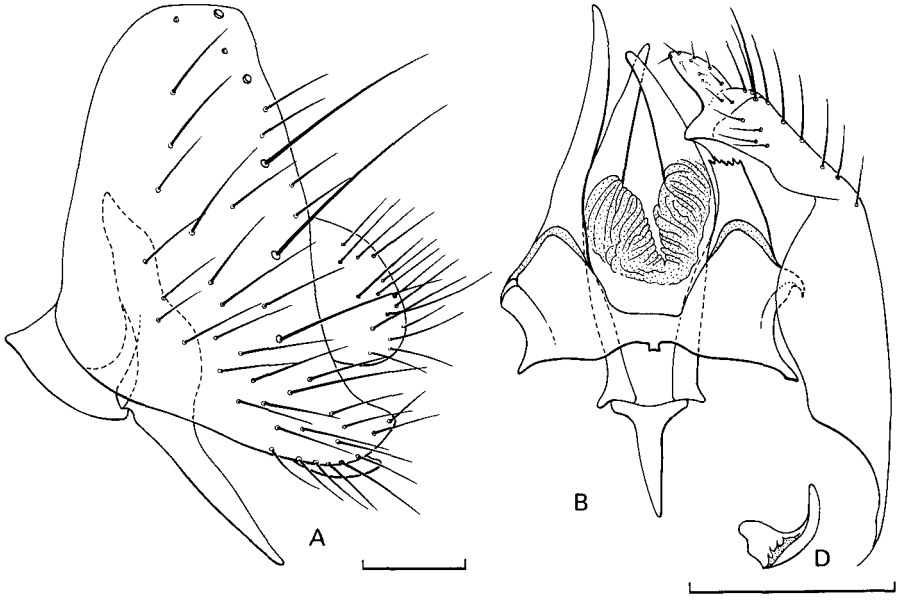

Fig. 26. *Homoneura* (*H.*) *malayensis* n. sp.

Mesonotum with 0+3 *dc*, 8 rows of *acr*, *prsc* shorter than 1st *dc*, *ipa* 4/5 of *opa*; anterior *sp* slightly shorter than the posterior; C-index 2.5-2.9, r-m at middle of discal cell, 4V-index 1.5-1.7, 5V-index 0.14; f_1 with 3-4 *pv*, f_2 with 5-6 *a*; t_2 with 2 long spurs, *pd* on t_1 longest.

Protandrium horseshoe-shaped, twice as long as epandrium on dorsal side; S6 subequal to S5 in length but slightly wider than that. Epandrium (Fig. 26) projected on each posteroventral corner, with 5 pairs of long posterior bristles; surstylus short; hypandrium inverted U-shaped, with distal apodemes broad; praegonite long, postgonite absent; aedeagus with lateral sclerites decussate before tips; aedeagal apodeme about 1/7 length of aedeagus; ejaculatory apodeme 25 μm long.

Body length 3.7 mm, wing length 3.1 (holotype)-3.3 (♀) or 3.6 (♂) mm.

Holotype ♀, 40 km N. of Kuala Lumpur (350-400 m), Selangor, Malaya, 16. IX. 1960 (J.G.) (BISHOP 15065). Paratypes: 1♂, Kampong Jeram, Kelantan, Malaya, 10. IX. 1990 (M.S.); 1♀, Kuala Terengganu (220 m), Pahang, 14. XII. 1958 (T.M.); 1♀, Rajang Delta, Sarikei District, Sarawak, Borneo, 15-25. VII. 1958 (T.M.).

Distribution. Malaya and Borneo (Sarawak).

Remarks. Both dorsal and ventral bands on face in a female from Sarawak are separated into 2 lateral spots.

42. *Homoneura* (*H.*) *mediosignata* (Frey)

Mallochomyza mediosignata Frey, 1927: 34.

This species is characteristic in the T5-6 quinquespotted, and in surstylus projected downwardly and shortly bifurcated on tip, thus differing from *neosignata*, *signata*, etc.

Wing 3.6-4.0 mm long, narrowly and faintly clouded around m-m; T5-6 each with median spot narrow subquadrate, extending almost over entire length of tergite, sublateral one subtriangular and about 1/2 length of tergite, lateral one extends over tergite. Protandrium ringed, with dorsal apodeme short, sternite narrow subtriangular; S4-5 each slightly wider than long, S6 as long as wide; surstylus (Fig. 27) slightly bifid on tip (not rounded as stated by Malloch, 1929); hypandrium Y-shaped; gonites absent; aedeagus with a pair of strong teeth on dorsal and ventral membranous parts, respectively; aedeagal apodeme a little longer than half of aedeagus.

Specimens examined. SABAH: 2♀, Keningau, 12-17. I. 1959 (T.M.); 2♂, Sepilok Forest Reserve, 29. X. 1957 (J.G.); 3♂1♀, Gomantong Caves, 22-26. XI. 1958 (T.M.). SARAWAK: 3♂9♀, Santubong, Kuching, 18-30. VI. 1958 (T.M.); 3♀, Pengkalan Tebang, Bau District, secondary forest, 6. IX. 1958 (T.M.); 5♂5♀, Sungai Menjuau, nr. Sungai Tekalit, VIII-IX. 1971 (K.F.); 7♂4♀, Sungai Mengion, nr. Ng. Tekalit, Kapit District, VIII-IX. 1971 (K.F.).

Distribution. Philippines, Borneo (Sabah, Sarawak), India. New to Borneo.

Remarks. The number of spots on the abdominal tergites is variable: in females sublateral ones on T5-6 are rarely quite obscured; in both males and females T4 with indistinct median stripe and distinct sublateral spots. Uppermost seta of *pm* is sometimes longer than others (not always as noted by Malloch, 1929).

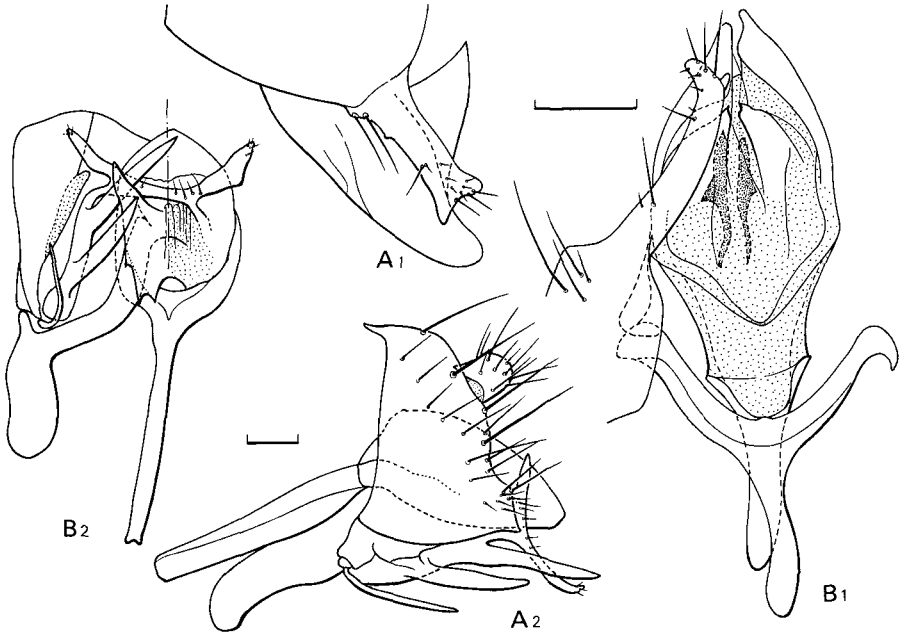

Fig. 27. *Homoneura* (*H.*) *mediosignata* (Frey)-A_1, B_1, ; *H. multicornuta* n. sp.-A_2, B_2.

43. *Homoneura* (*H.*) *monticola* (de Meijere)

Lauxania monticola de Meijere, 1916b : 203.

This testaceous species is easily recognizable by the microscopically pubescent arista, 1+4 pairs of long *acr* (becoming longer posteriorly), only one t_2 spur, brownish black median fasciae and posterolateral bands on T4-6 (triangular on sublateral sides but narrowed ventrally along posterior margin).

Other main characteristics are as follows : *oc* 1/2 of lower *or* ; mesonotum and scutellum fuscous, gray dusted ; *acr* in 6 rows before suture but 4 behind suture ; wing 4.2 mm long, C-index 2.3 ; t_3 *pd* longer than that of t_1.

Specimen examined. 1♀, Tenompok, Borneo (Sabah), 13. II. 1959 (T.M.).

Distribution. Java, Borneo (Sabah) ; Solomon Is. New to Borneo.

Remarks. It is unique in the long palpus (as long as width of head) and in the absence of spinulous comb on f_1.

44. *Homoneura* (*H.*) *multicornuta* n. sp.

Diagnosis. This testaceous yellow species is unique in the filiform praegonite and the presence of 3 pairs of long processes on postgonite, thus differing from *sauteri* Malloch.

Male and female. Testaceous yellow, sparsely whitish pollinose ; face and gena densely pruinose ; arista brown except base ; mesonotum subshining ; wing faintly tinged with brownish yellow, m-m faintly bordered with brown ; abdomen

usually yellowish brown, cercus brown.

Frons slightly wider than long, 1.3 times as wide as eye, almost parallel-sided; lower *or* nearly 2/3 of the upper; *oc* almost as long as lower *or*; face flat or very slightly convex centrally, scarcely beyond parafacialia in profile; eye slightly higher than broad; gena 1/6-1/8 height of eye; *pm* 5-7; antennal segment 3 ovoid, 1.5 times as long as wide; arista plumose, with dorsal longest hair 1.5-1.7 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, distance between 1st and 2nd *dc* about twice as long as that between suture and 1st *dc*, 8 rows of *acr*, *prsc* slightly shorter or longer than 1st *dc*, *ipa* 2/3 of *opa*; C-index 3.3-3.8, r-m usually before middle of discall cell, 4V-index 1.3-1.7, 5V-index 0.17-0.19; f_1 with 4 *pv*, f_2 with 4-6 *a*; t_2 with 1 long and 1 short spurs (sometimes also with 1 minute one), t_3 *pd* short; *pd* of females distinctly longer than those of males.

Protandrium horseshoe-shaped, 3/4 length of T6 on dorsal side and with dorsal apodeme 1/2 of tergite; S6 1.5 times as wide as long; epandrium (Fig. 27) without distinct surstylus, only protruded on posteroventral tip; hypandrium somewhat V-shaped, with basal apodeme short but broad, posterior bridge short and with a pair of serrate processes on ventromedian part; praegonite filiform; postgonites united with each other posteriorly by a bridge, with 3 long processes, of which distal one is setulose on tip; aedeagus brown, short oval; aedeagal apodeme very long.

Body length 3.4 (holotype)-3.9 mm, wing length 2.8-3.2 (holotype) mm.

Holotype ♂, Sungai Buloh, Selangor, Malaya, 20. VIII. 1986 (M.S.). Paratypes: 3♂2♀, FRIM, Kepong, Selangor, Malaya, 5., 21. & 23. VIII. 1986 (M.S.); 1♂, Port Dickson, Negeri Sembilan, Malaya, 14-17. VIII. 1986 (M.S.); 1♀, Kota Kinabalu, Sabah, Borneo, 4. X. 1988 (M.S.); 3♀, Sandakan, Sabah, Borneo, 10. X. 1988 (M.S.).

Distribution. Malaya and Borneo (Sabah).

45. *Homoneura* (*H.*) *neosignata* Malloch

Homoneura neosignata Malloch, 1929: 77.

This medium-sized, testaceous yellow species has a pair of large black spots on the sublateral sides of T5 and a faint cloud on m-m. In the male the surstylus is black and sharply pointed posteriorly and ventrally. This species can easily be separated from *signata* by the number of spots on the abdominal tergites and by the structure of male genitalia.

Protandrium ringed, about 1/2 length of T6 on dorsal side; S5-6 each 1.3 times as wide as long; epandrium (Fig. 28) broadened ventrally, with surstylus sharply pointed on posterior and ventral apices; hypandrium short U-shaped; praegonite well sclerotized, postgonite as long as aedeagus, pointed on distal tip; aedeagus with lateral sclerites more or less projected dorsally at distal end, bearing many spine-like processes near base of ventral membrane; aedeagal apodeme 1.3 times as long as aedeagus.

Specimen examined. 1♂, FRIM, Kepong, Selangor, Malaya, 23. VIII. 1986 (M.S.).

Distribution. Philippines, Malaya. New to Malaya.

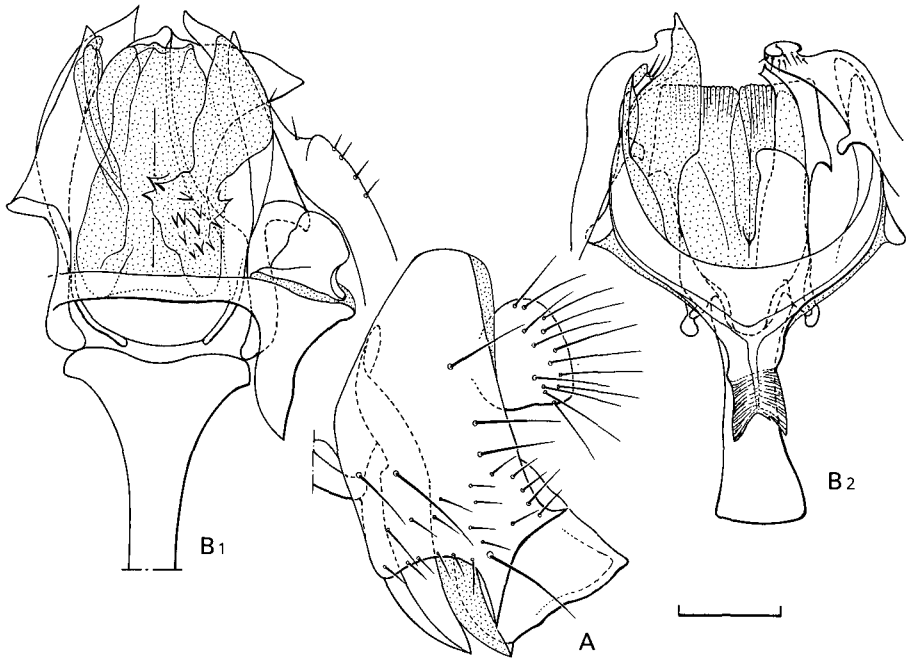

Fig. 28. *Homoneura* (*H.*) *neosignata* Malloch-A, B_1, dorsal and ventral halves of aedeagus; *H. nivalis* n. sp.-B_2, dorsal and ventral halves of gonites and aedeagus.

46. *Homoneura* (*H.*) *nivalis* n. sp.

Diagnosis. This fuscous species is readily recognized by the snow-white median vitta on mesonotum and scutellum, specifically marked wings and distinctive male genitalia.

Discussion. This species is easily distinguishable from *discoglauca* by its maculate wing.

Male and female. Fuscous; head including antenna densely whitish pruinose but postgena sparsely; frontalia and parafacialia testaceous, face testaceous to fuscous, ventral margin of frontalia narrowly and epistome yellowish; parafacialia silvery white pruinose; antennal segments 1-2 brown, 3 pale testaceous, silvery white pruinose and with apicoventral 1/2 brown, arista brown; palpus brown. Thorax brownish black, mesonotum with snow-white median vitta between *dc*-rows, extending to scutellum which is yellowish on apical 1/3-1/2; pleura with a narrow gray-dusted stripe from propleuron to ventral margin of pteropleuron across middle of mesopleuron. Wing faintly tinged with yellow, with basal area brown proximad of about forking point of Rs; small brown spot around r-m, brown preapical fascia (from costa to ultimate section of M_{3+4}) on level of m-m; whitish between dark basal area and preapical fascia; calypter with margin and fringe brown; halter testaceous. Legs brown, coxae and femora sparsely gray dusted but fore coxa silvery white, tibiae and tarsi yellow. Abdomen black, T3-6 usually with yellowish median longitudinal stripes (broadest on T6), and all T dusted with brownish gray

anterolaterally and with silvery whitish gray centrally and lateroposteriorly.

Frons as long as wide, 1.2 times as wide as eye, slightly diverging ventrally; lower *or* slightly shorter than the upper; *oc* 1/2 of lower *or*; eye 1.3 times as high as wide; face flat; gena 1/9 height of eye; *pm* 6-7, very short; antennal segment 3 twice as long as wide, distinctly narrowing apically; arista with dorsal longest hair 1.5 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, 6 rows of *acr*, *prsc* nearly 1/2 of 1st *dc*, *ipa* about 1/3 of *opa*; C-index 2.5 (♂)-3 (♀), r-m beyond middle of discal cell, 4V-index 2.1-2.5, 5V-index 0.2-0.26; f_1 with 4 *pv*, f_2 with 6-7 *a*; t_2 with 1 long and 1 short spurs, all t with *pd*.

Protandrium annular, distinctly narrowed ventrad of spiracles; S4 3.3, S5-6 2.5 times as wide as long, each without long bristles posterolaterally except marginal ones on S6; surstylus incurved on apical 1/2 and shortly bifid and setulose on tip (Fig. 28); hypandrium Y-shaped; praegonite membranous mesally and with 2 setae at middle of lateral side, postgonite long and minutely bifurcated on tip; aedeagus truncated on distal end, with a spine-like tooth at distal 1/3 of each lateral sclerite, and dorsally with a pair of lobate sclerites; aedeagal apodeme slightly shorter than aedeagus.

Body length 2.5 (♂)-3.3 (holotype) mm, wing length 2.5 (♂, ♀)-3.1 (holotype) mm.

Holotype ♀, Forest Camp, 19 km N. of Kalabakan, Sabah, Borneo, 22. X. 1962 (K.K.) (BISHOP 15068). Paratypes: 8♀, same locality as holotype, 17, 22. & 27. X. and 4, 8. & 15. XI. 1962 (K.K.); 1♂, Kalabakan, Tawau District, Borneo, primary forest, 8-15. XI. 1958 (T.M.); 2♂, Kuala Tahan, Pahang, Malaya, 12-14. XII. 1958 (L.Q.).

Distribution. Borneo (Sabah) and Malaya.

47. *Homoneura* (*H.*) *nudifrons* (Kertész)

Lauxania (Sapromyza) nudifrons Kertész, 1913: 99.

Belongs to the species-group with the pubescent arista and clear wing (2.5 mm long); 6 rows of *acr* in same length excepting *prsc*, T5 with a pair of large round spots on lateral sides.

Specimen examined. 1♀, Lake Area, Bau, Sarawak, Borneo, 30. VIII. 1958 (T.M.).

Distribution. Formosa, Borneo (Sarawak). New to Borneo.

48. *Homoneura* (*H.*) *octopannosa* n. sp.

Diagnosis. This new species is easily recognized by the eight black bands on T3-6, thus differing from the species of *neosignata*- and *signata*-groups. It exhibits sexual dimorphism in the coloration of face, thorax and legs.

Discussion. The male genitalia of this species are similar to those of *signata* in the setaceous epandrium and in the shapes of surstylus and hypandrium, but the aedeagal lateral sclerites of *octopannosa* are distinctly expanded and divergent distally.

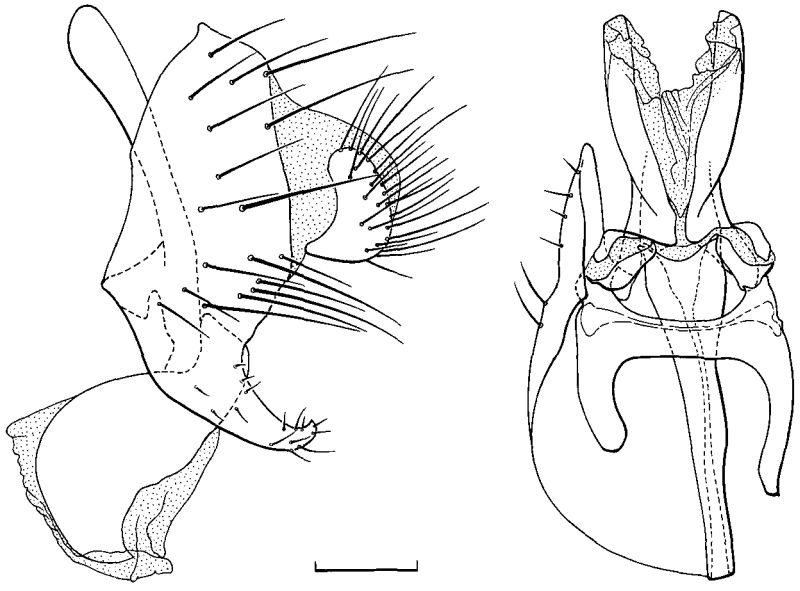

Fig. 29. *Homoneura* (*H.*) *octopannosa* n. sp.

Male and female. Head testaceous, sparsely whitish pollinose, face and palpus yellowish brown in male but very faintly brown tinged in female; thorax dark brown in male but testaceous in female, densely gray dusted. Wing faintly tinged with brownish yellow, m-m very faintly bordered with brown in female; legs testaceous yellow in female but coxae and femora of male brown. Abdomen brownish yellow, T3-6 with a pair of blackish bands excepting median fasciae which are distinctly narrowed posteriorly (about 1/4 as wide as dorsal width of T3, almost linear on T6) and posterior margins narrowly yellowish; male S6 brownish on posterior 1/3.

Frons slightly longer than wide (1.3 : 1), approximately 1.3 times as wide as eye, weakly converging ventrally; lower *or* slightly shorter than the upper; *oc* slightly shorter than lower *or*; face convex centrally, distinctly beyond parafacialia in profile; eye slightly higher than broad; gena narrow, 1/12 height of eye; *pm* 5-6; antennal segment 3 1.5 times as long as wide, rounded apically; arista plumose, with dorsal longest hair almost twice as long as width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 8 rows of *acr*, *prsc* slightly shorter than 1st *dc*, *ipa* 2/3-4/5 of *opa*; C-index 2.9-3.1, r-m distinctly before middle of discal cell, 4V-index 1.2-1.3, 5V-index 0.17-0.19; f_1 with 4 *pv*, f_2 with 3-4 *a*; t_2 with 1 long and 1(♂) or 2(♀) short spurs, all t with *pd*.

Protandrium ringed, 1/3 length of T6 on dorsal side; S5-6 each slightly longer than wide, the former oval in form, the latter broadened on posterior half; epandrium (Fig. 29) with surstylus distinctly projected posteriorly, narrowed distally and more or less hooked at end; hypandrium U-shaped, with basal apodemes asymmetric in length; praegonite small and largely membranous, postgonite absent; aedeagus with lateral sclerites divergent posteriorly; aedeagal apodeme nearly 1.5

times as long as aedeagus.

Body length 3.8(♂)-4.2 (holotype) mm, wing length 3.0(♂)-3.3 (holotype) mm.

Holotype ♀, Sandakan, Sabah, Borneo, 10. X. 1988 (M.S.). Paratypes: ♀, same data as holotype; 1♂, Pasoh Forest Reserve, Negeri Sembilan, Malaya, 9-13. VIII. 1986 (M.S.).

Distribution. Malaya and Borneo (Sabah).

49. *Homoneura* (*H.*) *padangensis* (de Meijere)

Lauxania padangensis de Meijere, 1916a : 91.

This testaceous yellow species is specific in the thickening of M_{3+4} at basal 1/4 of underside, which is furnished with microscopic black hairs, as in *subcostalis* n. sp., and in the structure of male genitalia.

Wing 3.5-4 mm long, faintly yellowish tinged anteriorly, with 4 pale brown clouds: on apex of R_{2+3}, slightly before apices of R_{4+5} and M_{1+2}, and over m-m. T4-6 each with a black subcircular spot at middle; protandrium horseshoe-shaped; epandrium (Fig. 30) with 2 pairs of long bristles, cercus distinctly projected ventrally; surstylus bifurcated, bearing long setae and 2 minute teeth on posterior process; hypandrium H-shaped; praegonite small and triangular; postgonite narrowed apically, with a minute tooth before apex and a seta at base; aedeagus with lateral sclerites asymmetric in position of strong tooth-like process; aedeagal apodeme almost as long as aedeagus.

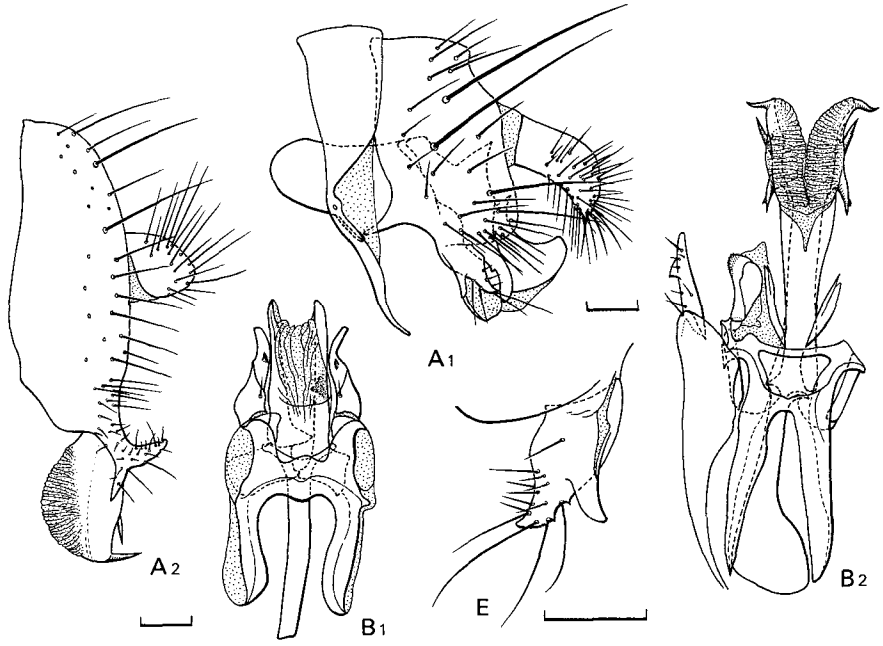

Fig. 30. *Homoneura* (*H.*) *padangensis* (de Meijere)-A_1, B_1, E, enlargement of surstylus; *H. pleuripuncta* Malloch-A_2, B_2.

Specimens examined. SABAH: 2♀, Kota Kinabalu, 4. X. 1988 (M.S.); 1♂, Sepilok Forest Reserve, 7. X. 1988 (M.S.); 1♀, Sandakan, 10. X. 1988 (M.S.).

Distribution. Sumatra, Borneo (Sabah), Philippines. New to Borneo.

Remarks. Basal thickening of M_{3+4} in male is not distinct as in female, and apical clouds on longitudinal veins in male are smaller than those of female; the ventralmost postgenal bristle is strong only in male, and a few bristly setulae below *h* are only distinct in female.

50. *Homoneura* (*H.*) *philippinensis* Malloch

Homoneura philippinensis Malloch, 1929: 68.

This small testaceous yellow species is recognized by the pubescent arista, shiny mesonotum, 3 or 4 postsutural pairs of long *acr* (decreasing anteriorly in length and posteriormost one subequal to *prsc*) in addition to *prsc*, clear wings (2.4-2.6 mm long) and spotted T5.

Discussion. The number of black spots on T5 is variable. Malloch (1929) stated that the male holotype has only one pair of large spots on sides, but 2 Malayan females examined have an additional narrow central spot as in *pubiseta* (Kertész, 1900).

Specimens examined. 3♀, Telok Chempedak, Kuantan, Pahang, Malaya, 18-21. IX. 1990 (M.S.).

Distribution. Philippines, Malaya. New to Malaya.

51. *Homoneura* (*H.*) *picta* (de Meijere), n. comb.

Drosomyia picta de Meijere, 1904: 114.
Lauxania (*Sapromyza*) *parviceps* Kertész, 1915: 521.

This fuscous species is characterized by the brown wings (2.7-3.4 mm long) with numerous hyaline spots, mesonotum with gray-pollinose irregular spots or patches, scutellum with a small gray spot anteromesally and large yellow spots on lateral sides, T3-6 each anteriorly with a pair of gray-dusted yellow subtriangular spots, which are usually connected with posterior one by narrow lines and small round spots on lateral sides, and legs with apices of femora, entire tibiae and tarsi yellow to testaceous.

Protandrium ringed, with a seta just above spiracle; epandrium (Fig. 31) densely setigerous along ventral margin; surstylus projected narrowly; hypandrium H-shaped, with bridge projected posteriorly at middle; praegonite long, more or less sinuated in ventral view; postgonite narrow and curved mesally; aedeagus with lateral sclerites well developed; aedeagal apodeme as long as or slightly longer than aedeagus; ejaculatory apodeme 95 μm long.

Remarks. Hyaline spots in each cell of wing are variable in number.

Specimens examined. MALAYA: 5♂, Berinchang, Cameron Highlands, 28-31. VIII. 1986 (M.S.); 18♂12♀, Perak, Maxwell Hill (1,350 m), 17-20. III. 1958 (T.M.); 1♀, King George V Nat'l Park, Kuala Tahan, Pahang, 15. XII. 1958 (J.G.). SABAH: 1♀, Tenompok (1,460 m), 48 km E. of Jesselton (Kota Kinabalu), 26-31. I. 1959 (T.M.).

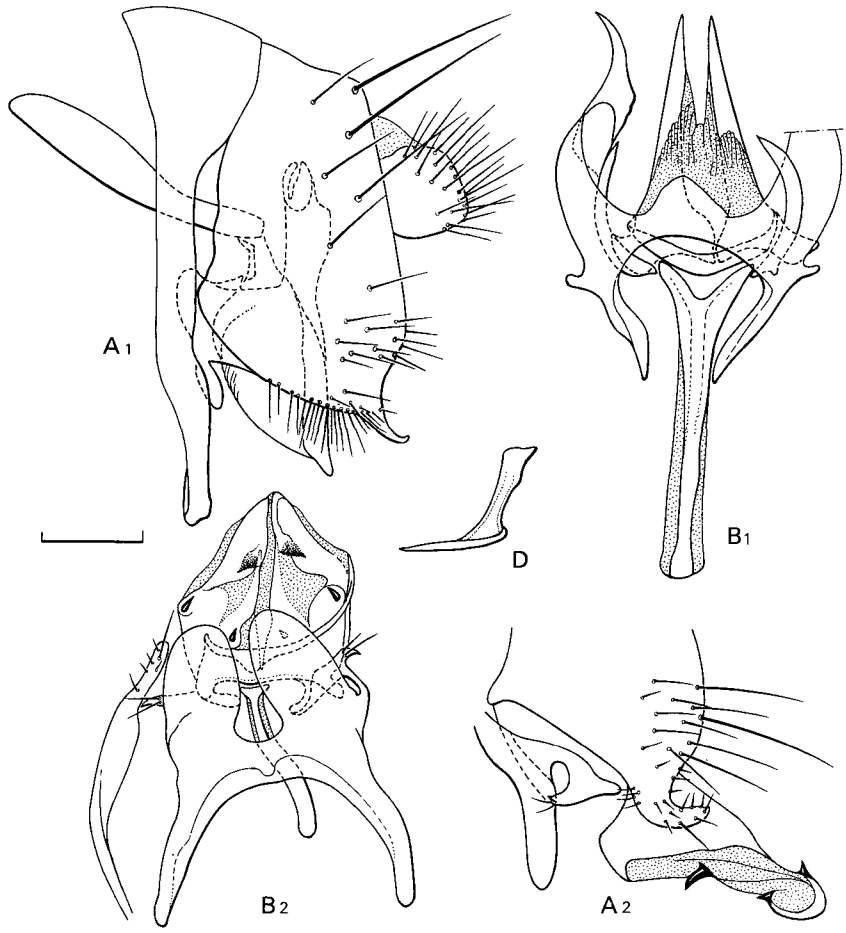

Fig. 31. *Homoneura* (*H.*) *picta* (de Meijere)-A_1, B_1, D ; *H. trypetoptera* (Hendel)-A_2, B_2.

Distribution. Java, Sumatra, Borneo (Sabah), Formosa, Malaya (Singapore), Thailand, India, Nepal, China. New to Borneo.

52. *Homoneura* (*H.*) *pleuripuncta* Malloch

Homoneura pleuripuncta Malloch, 1927 : 110.

This testaceous yellow species is characterized by the vittate thorax and dark brown wing with hyaline spots as in *quinquevittata* (de Meijere). It is distinguished, however, from *quinquevittata* by the broadly separate median vittae on mesonotum, 2 isolated spots along ventral margin of mesopleuron, large triangular median marks on T3-6 in addition to lateral two, short *oc* (1/2 of lower *or*) and hair on arista (3/5-4/5 as long as width of segment 3), and well-developed gonites. Wings are 3.6-4.1 mm long.

Protandrium ringed, with dorsal apodeme twice as long as length of tergite,

without ventral bridge ; S4-6 each almost as wide as long ; epandrium (Fig. 30) with surstylus bifurcated on tip (Malloch's fig. 7 and his description, 1929, are inaccurate) ; hypandrium H-shaped but with an additional bridge between ends of distal apodemes ; praegonite small, setulose apically ; postgonite narrow, slightly bifid on tip ; aedeagus with lateral sclerites each trispinose strongly, of which the one on tip is directed dorsally, the one before tip posteriorly, and the last is directed anteriorly and minutely bifurcated on tip ; aedeagal apodeme 2/3 length of aedeagus, distinctly broadened basally.

Specimens examined. MALAYA : 2♂, Berinchang, Cameron Highlands, 31. VIII. & 2. IX. 1986 (M.S.) ; 2♂2♀, Maxwell Hill, Perak, 17-20. III. 1958 (T.M.).

Distribution. Sumatra, Malaya. New to Malaya.

53. *Homoneura* (*H.*) *quiquenotata* (de Meijere)

Sapromyza quinquepunctata de Meijere, 1908 : 143.
Lauxania quiquenotata (de Meijere), 1915 : 137.

This testaceous yellow species is easily recognized by the wing with 5 brown spots on apices of R_{2+3}, R_{4+5} and M_{1+2}, and over both crossveins, antennal segment 3 black on apicoventral 1/3-1/2, short lower *or* (about 1/2 of the upper) and minute *pd* on t_3.

Protandrium ringed, dorsally 1/2 and ventrally 1/4 length of T6 ; S5-6 each twice as wide as long, S6 with a pair of posterolateral bristles extremely long ; epandrium (Fig. 32) with a pair of long dorsal bristles ; surstylus narrow and in-

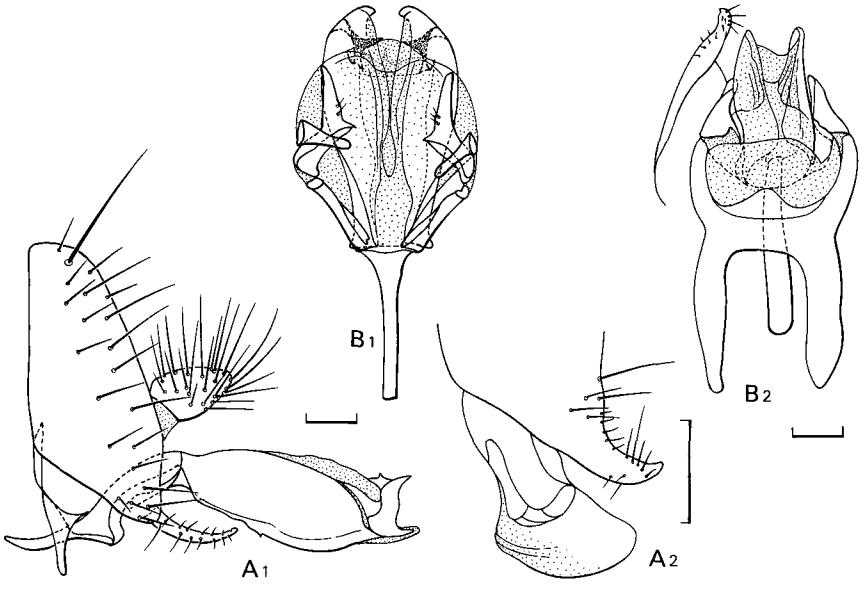

Fig. 32. *Homoneura* (*H.*) *quiquenotata* (de Meijere)-A_1, B_1 ; *H. quinquevittata* (de Meij.)-A_2, B_2.

curved; hypandrium with basal apodemes only; prae- and postgonites short; aedeagus with lateral sclerites ended into 2 teeth; aedeagal apodeme distinctly shorter than aedeagus; ejaculatory apodeme 35 μm long.

Specimens examined. MALAYA: 3♂, FRIM, Kepong, Selangor, 5, 7. & 21. VIII. 1986 (M.S.); 1♂, Sungai Buloh, Selangor, 20. VIII. 1986 (M.S.); 1♂, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.); 1♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-14. XII. 1958 (J.G.); 1♂, Kampong Tekek, Pulau Tioman, Pahang, 13. IX. 1990 (M.S.); 1♂, Bkt. Bakar, nr. Machang, Kelantan, 9. IX. 1990 (M.S.); 1♂, Kampong Jeram, Kelantan, 10. IX. 1990 (M.S.); 1♀, Botanical Garden, Singapore, 10. XII. 1958 (T.M.). SABAH: 2♀, Forest Camp, 19 km N. of Kalabakan, 12. XI. 1962 (Y.H.).

Distribution. Java, Malaya, Borneo (Sabah). New to Malaya and Borneo.

54. *Homoneura* (*H.*) *quinquevittata* (de Meijere)

Lauxania quinquevittata de Meijere, 1910: 135
Sciomyza septemlineata Brunetti, 1913: 178.

This testaceous yellow species is characterized by the following parts being dark brown: frontalia, antennal segments 1-2, a pair of round spots at middle of lateral sides of face, 3 stripes on mesonotum (median one broadened posteriorly and extended to scutellum, lateral ones above line of *prs* and *sa*) and 2 stripes on pleura (along ventral margins of noto- and mesopleura).

Wing 2.8-3.1 mm long, dark brown but paler along posterior margin and with many hyaline spots. Abdominal tergites with blackish subtriangular sublateral (T2-6) and lateral (T1-6) spots in addition to central ones on T3-6; protandrium ringed, with dorsal apodeme twice as long as length of tergite, ventral bridge very narrow; S4 as long as wide, S5 slightly longer than wide, S6 1.4 times as long as wide, S4-5 each with a pair of long bristles (1.5 times as long as length of sternite) at middle; surstylus (Fig. 32) somewhat hook-like, minutely pointed on tip; hypandrium H-shaped; praegonite small, postgonite absent; aedeagus with lateral sclerites smooth, as long as aedeagal apodeme.

Remarks. Infuscations are variable among the specimens, and a new variety *formosana* was described by Malloch (1927). Antennal segment 3 entirely yellow or distinctly brown on apical 1/3; palpus entirely yellow or brownish black, and only darkened on tip and along ventral margin; median vitta on mesonotum sometimes divided narrowly between median rows of *acr* by a pale line; subapical hyaline spot in cell R_5 usually isolated but sometimes fused with preapical spot on R_{4+5} into a single large spot, and hyaline apicomarginal line in cell R_5 present as in *pleuripuncta* or absent.

Specimens examined. MALAYA: 2♂3♀, Mt. Berinchang, Cameron Highlands, 2-7. I. 1959 (L.Q.); 2♀, Maxwell Hill, Perak, 17. III. 1958 (T.M.). SABAH: 8♂2♀, 8 mil. N of Poring Hot Springs, Ranau, 8-18. X. 1958 & 22-23. I. 1959 (T.M.); 6♂13♀, Tenompok, 10-19. II. 1959 (T.M.); 1♀, Mt. Kinabalu, Kambaranga, 22. X. 1958 (T.M.); 1♂1♀, Kampong Moyog (350 m), nr. Kota Kinabalu, 27. IX. 1988 (M.S.); 1♂, Sandakan, 26. XI. 1958 (T.M.). SARAWAK: 3♀, Nanga Pelagus, nr. Kapit, 7-14. VIII. 1958 (T.M.); 2♂, Bidi, Bau District, 2-3. IX. 1958 (T.M.); 1♀,

Sungai Menjuau, nr. Sungai Tekalit, VIII-IX. 1971 (K.F.).

Distribution. Formosa, Philippines, Japan (Ryukyus), Java, Sumatra, Malaya, Borneo (Sabah, Sarawak), India, Nepal. New to Malaya and Borneo.

55. *Homoneura* (*H.*) *sauteri* Malloch

Homoneura sauteri Malloch, 1927 : 171.

This medium-sized yellowish species is characterized by the clear wing (2.8-3.3 mm long, sometimes m-m very faintly clouded at middle).

Protandrium horseshoe-shaped ; S5-6 each as long as wide ; surstylus (Fig. 33) well developed ; hypandrium narrow bridge-like ; praegonite largely membranous, postgonite absent ; aedeagus with lateral sclerites especially sclerotized on distal 1/3 and swollen ; aedeagal apodeme less than 1/3 length of aedeagus ; ejaculatory apodeme 20 μm long.

Specimens examined. MALAYA : 1♂2♀, FRIM, Kepong, Selangor, 14. X. 1988. & 23-25. IX. 1990 (M.S.). SABAH : 1♀, Kota Kinabalu, 4. X. 1988 (M.S.) ; 3 ♂7♀, Sandakan, 10. X. 1988 (M.S.).

Distribution. Formosa, Malaya, Borneo (Sabah). New to Malaya and Borneo.

56. *Homoneura* (*H.*) *setiparameria* n. sp.

Diagnosis. This species, with spotted wings, is readily distinguishable by the pubescent arista and the presence of a fuscous fascia at middle of each of T2-6 in addition to a pair of lateral spots on T6.

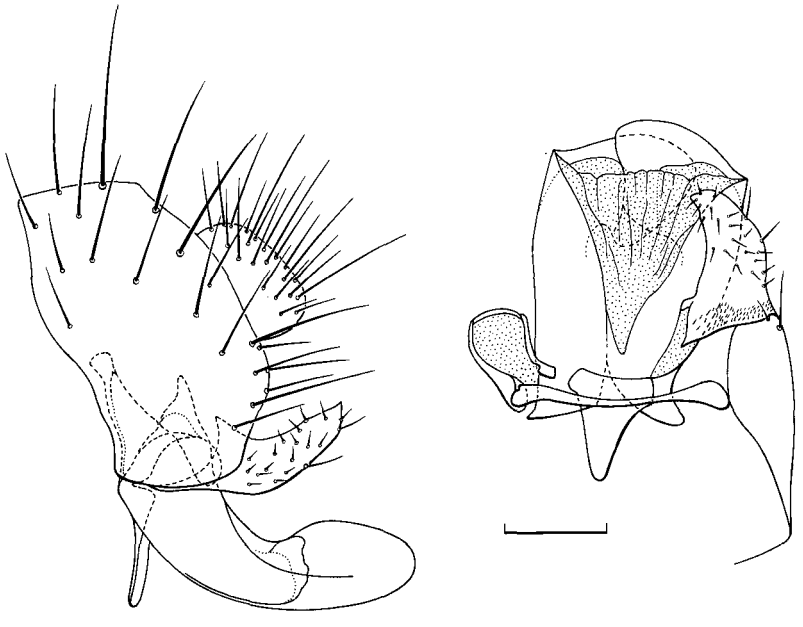

Fig. 33. *Homoneura* (*H.*) *sauteri* Malloch.

Discussion. This large species, with both crossveins darkened, is related to the Formosan *variinervis* (Kertész, 1915), but the spot on R_{2+3} is isolated and does not extend to apex of that vein, and *acr* are in dense rows. A united spot on R_{2+3} and R_{4+5} at level of m-m is similar to that of the Formosan *flavomarginata* (Kertész, 1915). The surstylus of *setiparameria* is similar to that of *chinensis* Malloch (1929, fig. 96). However, *setiparameria* differs from *flavomarginata* and *chinensis* in the arista pubescent, r-m clouded distinctly, and both gonites setigerous.

Male. Yellow; frons, antenna, mesonotum and abdomen faintly tinged with brown; mesonotum with a pair of pale brownish stripes beween *dc*-lines; T2-6 with dark brown median stripes and posterior margins, T6 with a pair of dark brown spots laterally; posterolateral corners of T3-5 only slightly brownish. Wing hyaline, faintly tinged with yellow, with 4 brown spots: subapical one on R_{2+3} connected with small one at middle of ultimate section of R_{4+5} and located almost on level of m-m, apical ones on R_{4+5} and M_{1+2} almost fused with each other into a single cloud and spots over both crossveins constricted at middle; apex of cell Sc very faintly brownish.

Frons as wide as long, slightly wider than eye, diverging ventrally; lower *or* a little shorter than the upper; *oc* short, about 1/3 length of upper *or*; face almost flat; eye slightly higher than broad (2.2 : 2); gena about 1/7 height of eye; *pm* 7-8, very short; antennal segment 3 slightly less than twice as long as wide, rounded apically; arista pubescent and with longest hair 1/5 as long as width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 8 rows of *acr*, *prsc* long; C-index 3.1, r-m before middle of discal cell, 4V-index 1.3, 5V-index 0.11; f_1 with 2

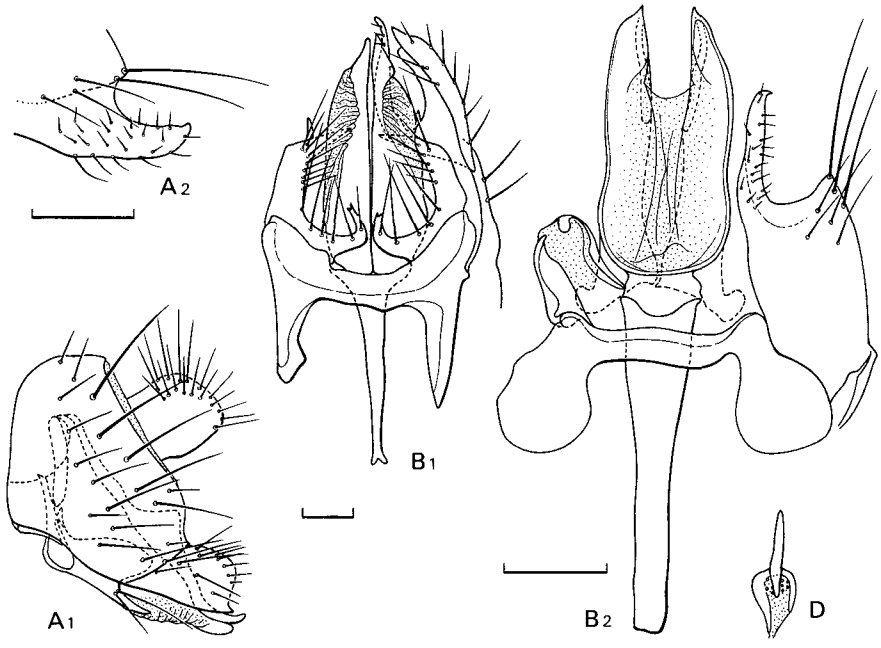

Fig. 34. *Homoneura* (*H.*) *setiparameria* n. sp.-A_1, B_1; *H. signata* (v.d. Wulp)-A_2, B_2, D.

pv, f_2 with 6 *a*; t_2 with 2 long and 1 minute spurs, t_3 *pd* as long as that on t_1.

Protandrium horseshoe-shaped; S4-6 each as wide as long; epandrium (Fig. 34) with surstylus broad, subquadrate in lateral view and pointed on ventral corner, accompanied by weakly sinuate and narrow process anteriorly; hypandrium H-shaped but distal apodeme short; praegonite and postgonite united with each other at base, the former densely setigerous on inner side and ending into 2 strong processes, the latter short, narrowed distally and bidentate on apex, bearing several long setae; aedeagus with lateral sclerites well developed, aedeagal apodeme slightly shorter than aedeagus.

Body length 4.6 mm, wing length 4.3 mm.

Holotype ♂, Berinchang, Cameron Highlands, Malaya, 29. VIII. 1986, at light (M.S.); distal segments of abdomen and genitalia mounted on a small slide and pinned.

Distribution. Malaya.

57. *Homoneura* (*H.*) *signata* (van der Wulp)

Minettia signata van der Wulp, 1881: 52.

This medium-sized testaceous species is very common in the forests, and distinct in having 2 pairs of brownish black spots on dorsal side and along lateral margins of T5-6, and also in having clear (faintly fulvescent) wings.

Protandrium ringed; S1-2 brownish yellow, S3-6 fuscous, S4-5 each as wide as long, S6 slightly longer than wide; epandrium brownish black but yellow on dorsal side, surstylus (Fig. 34) narrowed apically; hypandrium U-shaped, with basal apodeme very broad; praegonite small, postgonite absent; aedeagus well sclerotized on lateral sides; aedeagal apodeme subequal to aedeagus in length; ejaculatory apodeme 65 μm long. Egg-guide (Fig. 21) U-shaped, simple; spermathecae 3, 60-65 μm or 75 μm in diameter.

Remarks. Dorsal spots on T5 are rarely absent.

Specimens examined. MALAYA: 30♂19♀, FRIM, Kepong, Selangor, 5-6. & 21-23. VIII. 1986, 14. X. 1988 & 23-25. IX. 1990 (M.S.); 1♂1♀, FRIM, 12. III. 1958 (T.M.); 4♂, Sungai Buloh, Selangor, 20. VIII. 1986 (M.S.); 2♂, Subang Forest Reserve, 12-14. III. 1958 (T.M.); 3♂1♀, 19 km S. of Subang, Kuala Lumpur, 23. XII. 1958 (T.M.); 3♂1♀, Klang (nipa swamp), Selangor, 24-26. XII. 1958 (T.M.); 1♀, Ulu Langat, Selangor, 13-16. V. 1958 (T.M.); 1♀, Fraser's Hill, 16. III. 1966, at light (J.S.); 9♂3♀, Kuala Tahan, Pahang, primary forest, 12-14. XII. 1958 (T.M. & J.G.); 2♂5♀, King George V Nat'l Park to Kuala Terengganu, 15-17. XII. 1958 (J.G. & T.M.); 2♂, Taman, Pahang, 18. IX. 1960 (J.G.); 1♂, Rompin Mining Co. Railway Track, Pahang, 25. II. 1961 (K.K.); 2♂, Kampong Tekek, Pulau Tioman, Pahang, 13. IX. 1990 (M.S.); 12♂7♀, Telok Chempedak, Kuantan, Pahang, 18-21. IX. 1990 (M.S.); 2♀, Bkt. Bakar, nr. Machang, Kelantan, 9. IX. 1990 (M.S.); 4♂6♀, Kampong Jeram, Kelantan, 10. IX. 1990 (M.S.); 1♀, Port Dickson, Negeri Sembilan, 14-17. VIII. 1986 (M.S.). SINGAPORE: 1♂1♀, Nee Soon Water Reserve, 7. XII. 1958 (T.M.); 5♂24♀, Botanical Garden, 10-11. XII. 1958 (T.M.); 1♂1♀, Singapore to Kuala Tembeling, 11-12. XII. 1958 (T.M.). SABAH: 1♀, Labuan I., 24. X. 1957 (J.G.); 2♂1♀, Ranau, 28. IX. 1958 (T.M.); 6♂10♀, Sepilok Forest Reserve, 26. X.

1957 (J.G.) & 7. X. 1988 (M.S.); 2♂4♀, Sandakan, 10. X. 1988 (M.S.); 1♂1♀, Gomantong Caves, 20 mil. S. of Sandakan, 22-26. XI. 1958 (T.M.); 1♀, Sapagaya Lumber Camp, 2. XI. 1957 (J.G.). SARAWAK: 1♀, Semongok Forest Reserve, 24 km S. of Kuching, 15. III. 1968 (M.D.); 15♂5♀, Santubong, Kuching, 18-30. VI. 1958 (T.M.); 14♂8♀, Kampong Tapuh, Sadong, 4. VII. 1958 (T.M.); 8♀, Merirai Valley, Kapit District, 28. VII. 1958 (T.M.); 7♂13♀, Bidi, Bau Distr., 3. IX. 1958 (T.M.); 23♂35♀, Pengkalan Tebang, Bau Distr., 5-7. IX. 1958, primary and secondary forests (T.M.).

Distribution. Sumatra, Borneo (Sabah, Sarawak), Malaya (Singapore), Thailand, Philippines. New to Borneo.

58. *Homoneura* (*H.*) *signatifrons* (Kertész)

Sapromyza signatifrons Kertész, 1900: 264.

This species has the shiny black thorax and abdomen (mesonotum very sparsely brownish gray dusted), and clear wings. Although Kertész did not described, the parafacialia is dull testaceous as well as the anterior margin of frontalia. Longest hair of arista is slightly longer than width of segment 3; *acr* are arranged in 8 rows; tibiae and tarsi are yellow.

Specimen examined. 1♀, Pandasan, Sabah, Borneo, 9. VIII. 1969 (A.T.).

Distribution. New Guinea, Borneo (Sabah). New to Borneo.

59. *Homoneura* (*H.*) *simplicissima* (de Meijere)

Lauxania simplicissima de Meijere, 1910: 132.
Mallochomyza tagalica Frey, 1927: 38.

This species is similar to *sauteri* Malloch in the coloration and size. However, it is distinguishable from the latter by having a vibrissa-like seta which is extremely longer than other 4-7 *pm*, by dorsoapically pointed postgonite and aedeagus, and by U-shaped hypandrium.

Wings are 2.9-4.0 mm long; *acr* are arranged in 8, rarely 10 rows, but not in 12 rows as described by de Meijere (1910).

Protandrium horseshoe-shaped, almost as long as epandrium on dorsal side; S5-6 each slightly wider than long; epandrium (Fig. 35) projected ventroposteriorly and truncated at end, accompanied by a pair of rod-like surstyli on anteroventral corners; hypandrium narrow U-shaped; praegonite claviform in ventral view but pointed apically in lateral view; postgonite long, truncated at end and pointed dorsoapically, sparsely setulose along margin; aedeagus with lateral sclerites ended in axe in lateral view; aedeagal apodeme subequal to aedeagus in length, ejaculatory apodeme about 40 μm long.

Specimens examined. MALAYA: 2♂1♀, Kampong Tekek and Lalang, Pulau Tioman, Pahang, 13. & 14. IX. 1990 (M.S.). SABAH: 1♀, Sepilok, 8. X. 1988 (M.S.). SARAWAK: 1♂3♀, Sg. Mengion, nr. Ng. Tekalit, Kapit District, VIII-IX. 1971 (K.F.).

Distribution. Krakatau, Philippines, Malaya, Borneo (Sabah, Sarawak). New to Malaya and Borneo.

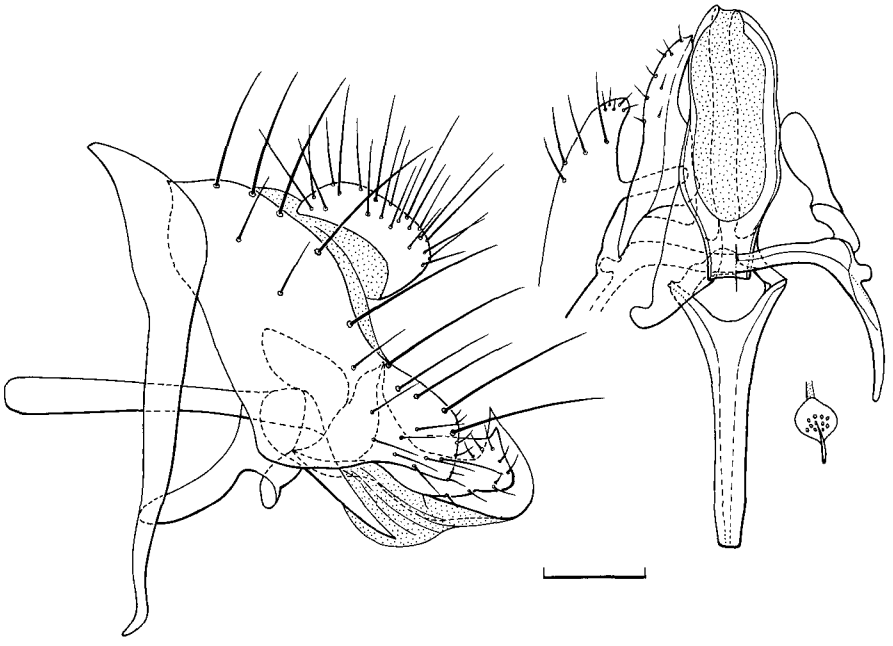

Fig. 35. *Homoneura* (*H.*) *simplicissima* (de Meijere).

60. *Homoneura* (*H.*) *spinulosa* n. sp.

Diagnosis. This small species has m-m only obscurely bordered with brown. Males are characterized by the epandrium with 2 pairs of distinct ventral processes in addition to surstylus and aedeagus spinulose at middle of ventral side, thus differing from *debilis* and *laticosta*.

Male and female. Yellow ; frons, antenna and mesonotum slightly tinged with brown, male abdomen more distinctly brown-tinged than female one ; head sparsely, thorax and abdomen more or less densely pruinose, weakly shining ; parafrontalia and face subshining ; arista and cercus black ; wing hyaline, faintly tinged with yellow, clouded obscurely with brown around m-m.

Frons slightly (♂) or distinctly (♀) wider than long, 1.3 (♂)-1.4 (♀) times as wide as eye, slightly diverging ventrally ; lower *or* 2/3-3/4 length of the upper ; *oc* almost as long as lower *or* ; face convex at middle of ventral 3/4, distinctly beyond parafacialia in profile ; eye slightly higher than broad (1.2-1.3 : 1) ; gena 1/8 height of eye ; *pm* 5 or 6, short ; antennal segment 3 twice as long as wide, narrowing apically ; arista plumose, with dorsal longest hair 1.5-2 times as long as width of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* very close to suture, 6 rows of *acr*, *prsc* slightly shorter than 1st *dc*, *ipa* 3/4 of *opa* ; C-index 3.0-3.3, r-m before middle of discal cell, 4V-index 1.6-1.7, 5V-index 0.16-0.19 ; f_1 with 2-3 *pv*, f_2 with 4-5 *a* ; t_2 with 1 long and 1 short spurs, all t with *pd*.

Protandrium horseshoe-shaped, about 4/5 length of T6 on dorsal side, with dorsal apodeme 1/2 length of tergite ; S5-6 each only a little wider than long ;

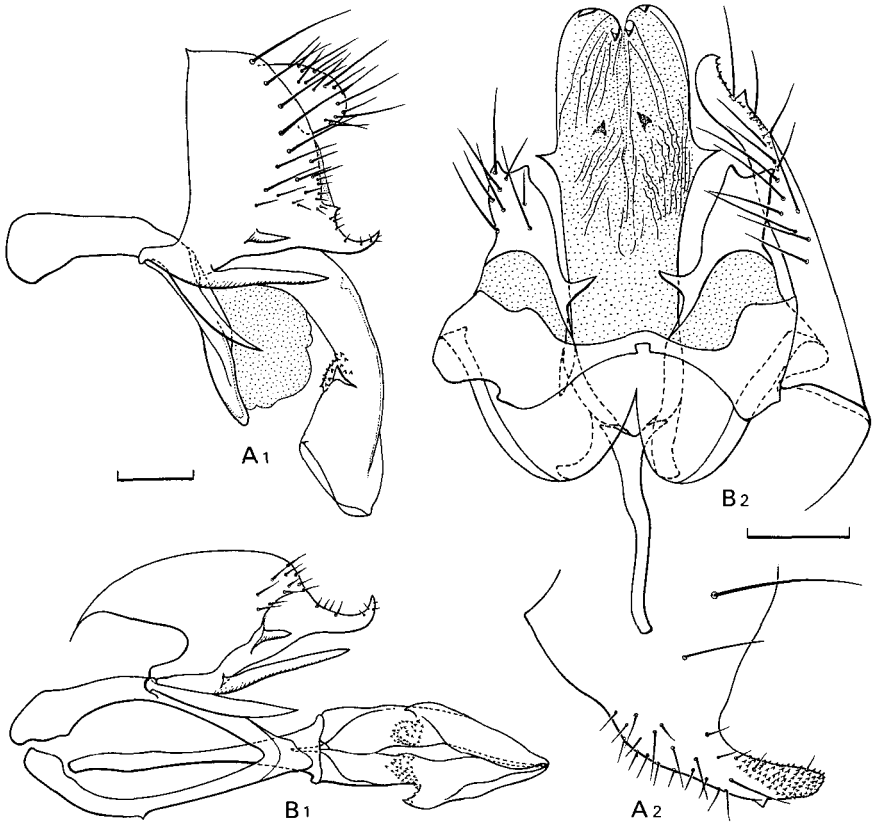

Fig. 36. *Homoneura* (*H.*) *spinulosa* n. sp.-A_1, B_1 ; *H. strigata* (de Meijere)-A_2, B_2.

epandrium (Fig. 36) with a long process on anteroventral corner and a short one at middle near ventral margin in addition to surstylus which is hooked ; hypandrium long V-shaped ; praegonite at middle of hypandrium narrow and pointed apically, postgonite absent ; aedeagus with a pair of strong teeth and numerous spinules at middle of ventral side ; aedeagal apodeme subequal to aedeagus in length.

Body length 3.1-3.3 (holotype) mm, wing length 2.8-2.9 (holotype) mm.

Holotype ♂, Sungai Buloh, Selangor, Malaya, 20. VIII. 1986 (M.S.). Paratypes : 3♂, FRIM, Kepong, Selangor, Malaya, 5. VIII. 1986 (M.S.) ; 1♀, Forest Research Center, Sepilok, Sabah, Borneo, 8. X. 1988 (M.S.).

Distribution. Malaya and Borneo (Sabah).

61. *Homoneura* (*H.*) *strigata* (de Meijere)

Lauxania strigata de Meijere, 1910 : 136.

This testaceous yellow species is easily recognized by having brownish octovittate mesonotum (these vittae are sometimes indistinct except median ones between *dc*-lines and those on *ia*-lines), brown-spotted wing (anterior costal marking

is separated into basal and apical ones at level of distal extremity of 1st spot on R_{4+5} beyond r-m), and centrally brown-fasciated T3(4)-6.

Arista short-haired, with longest hair 3/5 as long as width of segment 3; apical marking on R_{2+3} and those on apices of R_{4+5} and M_{1+2} separated by narrow oblique hyaline fascia just below apex of R_{2+3}. Protandrium horseshoe-shaped; S5-6 each as long as wide, with marginal bristles not long; surstylus (Fig. 36) projected posteriorly, minutely spinulose and with a distinct tooth before end of ventral side; hypandrium narrow but broadened laterally; praegonite large, with 3 teeth near inner base and on apex, postgonite absent; aedeagus with 3 pairs of spines on dorsal and ventral sides and a pair of tooth-like processes on lateral sides of sclerites; aedeagal apodeme about 1/2 of aedeagus; ejaculatory apodeme 130 μm long.

Specimens examined. MALAYA: 1♀, Berinchang, Cameron Highlands, 28. VIII. 1986 (M.S.). SABAH: 5♀, Tenompok, 10-14. II. 1959 (T.M.). SARAWAK: 3♂, Merirai Valley, 1-6. VIII. 1958 (T.M.).

Distribution. Java, Borneo (Sabah, Sarawak), Malaya. New to Borneo.

62. *Homoneura* (*H.*) *subcostalis* n. sp.

Diagnosis. This is a second species with M_{3+4} thickened at base. It is separated from *padangensis* by the characters given in the couplet (42) of the key, and also from the Philippine *costalis* Malloch (1929) by its narrow apical marking of wing and 3 series of markings on T5-6.

Male. Yellow to testaceous; frons sparsely and face densely whitish pruinose, parafrontalia shining; ocellar triangle not darkened; arista black except base testaceous; mesonotum and abdomen shining, very sparsely whitish dusted; T4-5 with brownish black median stripes (not reached to posterior margin of tergite, and stripe on T5 twice as wide as that on T4), T5 with brown bands on posterolateral 1/2-2/3, T6 brownish black except a pair of yellowish sublateral stripes; cercus brown. Wing hyaline, tinged with yellow anteriorly, distinctly brown from apex of Sc to apex of R_{2+3} along costa, the brown marking being posteriorly extended almost to R_{4+5} or to posterior 2/3 of cell R_3, and apically connected with apical spots of R_{4+5} and M_{1+2} (each spot about 1/2 length of its vein), clouded around m-m and extended over ultimate section of M_{3+4}; calypter with fringe pale testaceous; halter pale testaceous yellow. Legs yellow.

Frons almost as long as wide (1.6 : 1.4), slightly wider than eye, parallel-sided; *oc* 2/3-3/4 length of lower *or* which is slightly shorter than the upper; *oh* and scattered setulae on ventral 1/2 of frontalia reclinate; face flat; eye higher than broad (2.5 : 2), sparsely with minute hairs; gena about 1/10 height of eye; *pm* 8-9, short; antennal segment 3 1.6-1.8 times as long as wide, narrowing apically; arista nearly thrice as long as segment 3, plumose, with dorsal longest hair nearly twice as long as width of segment 3.

Mesonotum with 0+3 *dc*, 8-10 rows of *acr*, *prsc* strong; C-index 4.3, r-m distinctly before middle of discal cell, 4V-index 1.13-1.31, 5V-index 0.14-0.17; f_1 with 3-6 *pv*, f_2 with 4-6 *a*; t_2 with 3 spurs (median one longest, inner and outer ones subequal), all t with *pd*.

Protandrium (Fig. 37) ringed, with dorsal apodeme projected and sternite extended laterally in a form of T; S6 almost as wide as long, densely setigerous and

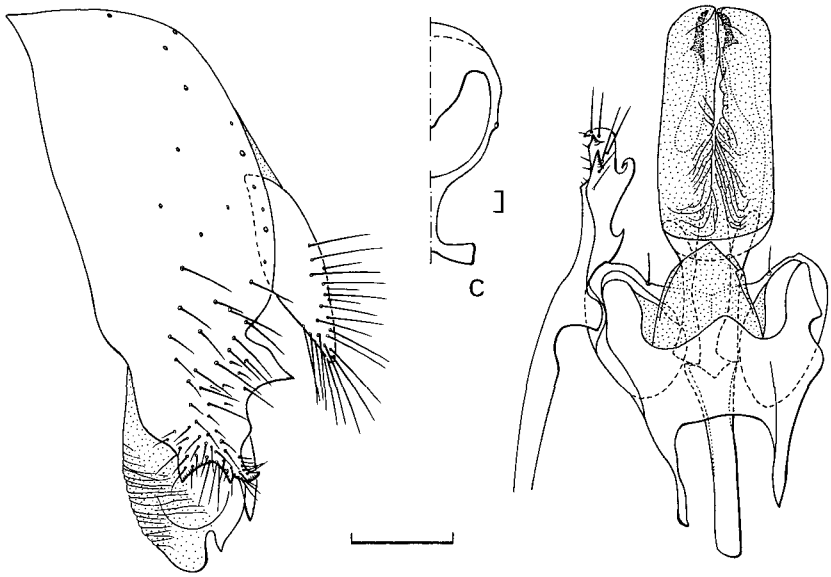

Fig. 37. *Homoneura* (*H.*) *subcostalis* n. sp.

without long bristles along margin; epandrium with short bristles sparsely excepting ventral side; surstylus with 3 large and 2 small teeth; hypandrium H-shaped, with bridge broad; prae- and postgonites small, the latter with a seta; aedeagus with lateral sclerites dorsally with a pair of hook-like processes before apex, nearly twice as long as aedeagal apodeme.

Female. Similar to male, but median stripes on T4-5 and posterolateral bands on T5 broader than those of male, T6-7 entirely brownish black.

Body length 5.0-5.4 (holotype) mm, wing length 4.3-5.0 (holotype) mm.

Holotype ♂, Taman, SE Pahang, Malaya, 18. IX. 1960 (J.G.) (BISHOP 15069). Paratypes: 1♂, Penang, Malaya, 12-14. I. 1959 (L.Q.); 1♂, Keningau, Sabah, Borneo, 12-17 I. 1959 (T.M.): 1♂, Gomantong Caves, Sabah, 22-26. XI. 1958 (T.M.); 1♂1♀, Forest Camp, 19 km N. of Kalabakan, Sabah, 13. & 25. XI. 1962 (K.K.).

Distribution. Malaya and Borneo (Sabah).

63. *Homoneura* (*H.*) *subvittata* Malloch

Homoneoura subvittata Malloch, 1927: 170.

This testaceous yellow species is characterized by the presence of 2 small circular spots on R_{4+5} beyond r-m in addition to apical one as in *strigata*, apical cloud on M_{1+2} distinctly paler than others and 2/3 as wide as that on apex of R_{2+3}, apex of cell Sc distinctly fuscous, spot on m-m attenuated at middle, and the presence of median longitudinal fasciae on T3(4)-6 in addition to lateroposterior bands on T3(4)-5 and lateral bands on T6.

Protandrium ringed, with dorsal apodeme very short, sparsely setose on posterior margin, sternite horizontal; S5-6 each about 1.3 times as wide as long; sur-

stylus (Fig. 38) projected on anteroventral corner of epandrium, minutely papillate on tip; hypandrium somewhat H-shaped; praegonite knob-like, postgonite absent; aedeagus with a pair of long processes at middle of dorsal side and with 2 teeth on lateral sclerites; aedeagal apodeme slightly shorter than or as long as aedeagus; ejaculatory apodeme 110 μm long.

Discussion. Malloch (1927) in his description stated that the mesonotum is faintly 4- or 6-vittate. This state was also observed in the specimens collected in Thailand (Sasakawa, 1987). Bornean specimens, however, have no vittae.

Remarks. First round spot on R_{4+5} beyond r-m is connected with or separated from apical marking of R_{2+3}, but 2nd spot always connected with that; apical markings on apices of R_{4+5} and M_{1+2} are united with each other or distinctly separated from each other; postsutural *ia* is distinct as in the species of subgenus *Minettioides*, being 1/3-1/2 of 3rd *dc* but short in the female; females have the median fasciae on T5-6 and lateral bands on T6 only.

Specimens examined. MALAYA: 1♀, Kuala Tahan (200 m), Pahang, 12. XII. 1958 (T.M.); 1♂, Kuala Terengganu (220 m), Pahang, 13. XII. 1958 (T.M.). SABAH: 1♀, Kampong Moyog (350 m), nr. Kota Kinabalu, 27. IX. 1988 (M.S.); 1♂ 1♀, Poring Hot Spring (500 m), 9-18. X. 1958 (T.M.). SARAWAK: 2♂, Pengkalan Tebang (300-450 m), Bau District, 5. IX. 1958 (T.M.).

Distribution. Formosa, Thailand, Malaya, Borneo (Sabah, Sarawak). New to Malaya and Borneo.

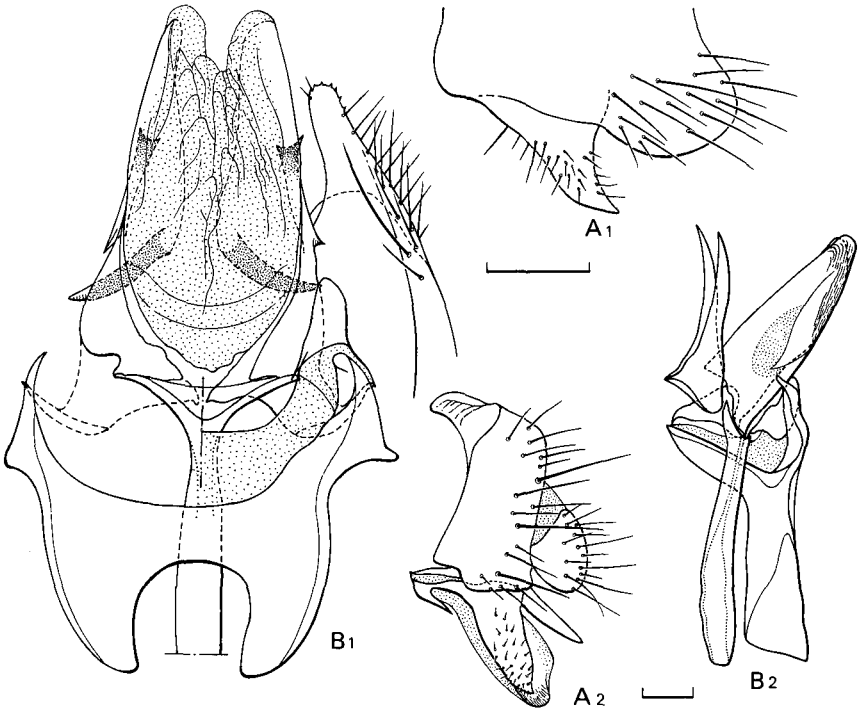

Fig. 38. *Homoneura* (*H.*) *subvittata* Malloch-A_1, B_1; *H. trispina* Malloch-A_2, B_2.

64. *Homoneura* (*H.*) *trifasciata* (de Meijere)

Lauxania trifasciata de Meijere, 1910 : 130.

This large testaceous species is distinct by the presence of the black median stripe and posterolateral bands (broadest at inner extremities and tapered off outwardly) on T4-6, and by the wing (4.0-4.3 mm long) with m-m very faintly clouded.

Specimens examined. 1♀, FRIM, Kepong, Selangor, Malaya, 6. VIII. 1986 (M.S.) ; 4♀, Sepilok Forest Reserve, Sabah, Borneo, 7. X. 1988 (M.S.).

Distribution. Java, Borneo (Sabah), Malaya. New to Malaya and Borneo.

65. *Homoneura* (*H.*) *trispina* Malloch

Homoneura (*Homoneura*) *trispina* Malloch, 1927 : 109.

Structurally similar to *folifera*, but small (2.7-3.5 mm in wing length). Male genitalia are quite distinct, especially in the shapes of surstylus and praegonite. The calypter is marginated and fringed with brown.

Protandrium ringed, sternite quadrate (about 3/4 as long as tergite ; Fig. 20) ; S5-6 each about twice as wide as long, the latter deeply excavated at middle of posterior 2/3 ; epandrium (Fig. 38) with a pair of dorsal apodemes projected semicircularly ; surstylus rather broad, minutely pointed on tip, accompanied by a short claw-like process at anterior end ; hypandrium Y-shaped ; praegonite reniform, about 1/3 length of postgonite which is sharply pointed apically ; aedeagus well sclerotized laterally ; aedeagal apodeme subequal to aedeagus in length.

Specimens examined. MALAYA : 1♀, Klang gates, Kuala Lumpur, 31. XII. 1958 (L.Q.) ; 1♀, Cameron Highlands, 4-6. I. 1959 (L.Q.) ; 1♀, Fraser's Hill, 16. III. 1966, at light (J.S.) ; 2♀, Pasoh Forest Reserve, Negeri Sembilan, 9-13. VIII. 1986 (M.S.) ; 5♂11♀, Kuala Tahan, Pahang, 12-14. XII. 1958 (T.M.) ; 2♂, King George V Nat'l Park, Gua Che Yatim, Pahang, 16. XII. 1958 (T.M.) ; 4♂3♀, Gua Che Yatim to Terengganu, 17. XII. 1958 (T.M. & L.Q.). SINGAPORE : 1♂5♀, Botanical Garden, 10-11. XII. 1958 (T.M.). SABAH : 1♂1♀, Kampong Moyog (350 m), nr. Kota Kinabalu, 27. IX. 1988 (M.S.).

Distribution. Java, Sumatra, Malaya, Borneo (Sabah). New to Borneo.

66. *Homoneura* (*H.*) *trivittata* n. sp.

Diagnosis. This new species is easily distinguished by having 3 brown transverse bands on the wing, thus differing distinctly from the Formosan *bistriata* (Kertész, 1915) in wing pattern.

Male and female. Yellow ; head very sparsely pollinose, frons and face weakly shining ; frons and antenna slightly brown tinged ; arista brown ; face linearly brown along ventrolateral margins, sometimes along whole lateral margins ; occiput dorsally with pale brown quadrate marking ; mesonotum and abdomen matt, sparsely whitish gray dusted. Wing with 3 brown fasciae : basal one on r-m extending obliquely to costa distad of apex of R_1 and posteriorly to wing margin in an obscure

cloud, median and preapical ones extend distinctly across the wing, the former on m-m anteriorly reaching at middle of 2nd section of costa and posteriorly broadened (about twice as wide as width of anterior part), the latter broadest, with lateral end at level of apex of R_{2+3} and extending from apical 1/5 of R_{2+3} to preapical 1/4-3/5 of cell M_2 ; apex of cell Sc clouded.

Frons very slightly wider than long, about 1.3 times as wide as eye ; lower *or* 2/3-3/4 of the upper ; *oc* slightly shorter than lower *or* ; face almost flat ; eye slightly higher than (♂) or as high as (♀) broad ; gena 1/7 height of eye ; *pm* 5 or 6, very short ; antennal segment 3 1.8-2.0 times as long as wide, narrowing apically ; arista plumose, with dorsal longest hair slightly shorter than with of segment 3.

Mesonotum with 0+3 *dc*, 1st *dc* close to suture, 6 rows of *acr*, *prsc* as long as or slightly shorter than 1st *dc*, *ipa* 1/3-1/2 of *opa* ; C-index 3.1-3.4, r-m before middle of discal cell, 4V-index 1.6-1.75, 5V-index 0.18-0.24 ; f_1 with 3 long *pv*, f_2 with 4-7 *a* ; t_2 with 1 long and 1 minute spurs, all t with *pd*.

Protandrium horseshoe-shaped, 1.5 times as long as T6 in dorsal side ; S5-6 each 2.4 times as wide as long, the latter slightly excavated at middle of posterior margin ; epandrium (Fig. 39) with 4 pairs of long marginal bristles ; surstylus incurved, ending into 2 strong teeth apically and with 2 minute teeth at outer base ; hypandrium H-shaped, with basal apodeme narrower than the distal ; praegonite short and pointed apically ; postgonite long but narrow, with 2 or 3 teeth at middle and setulae on tip ; aedeagus distinctly longer than aedeagal apodeme, with a pair of hook-like processes on ventroproximal side of lateral sclerites.

Body length 2.6-3.0 (holotype) mm, wing length 2.4-2.8, 2.6 (holotype) mm.

Holotype ♂, Sepilok Forest Reserve, Sabah, Borneo, 7. X. 1988 (M.S.). Paratypes : SABAH : 2♂1♀, same data as holotype ; 4♂2♀, same locality as holotype, 26. X. 1957 (L.Q.) ; 3♂10♀, Forest Camp, 19 km N. of Kalabakan, 16, 17. & 19. X. 1962 (K.K.) ; 3♂1♀, Kalabakan River, 48 km W. of Tawau, Tawau Residency, 8-18. XI. 1958 (T.M.). MALAYA : 1♀, FRIM, Kepong, Selangor, 7. VIII. 1986 (M.S.).

Distribution. Malaya and Borneo (Sabah).

Remarks. Females have sometimes a large preapical marking on R_{4+5}, with basal extremity connected with median fascia.

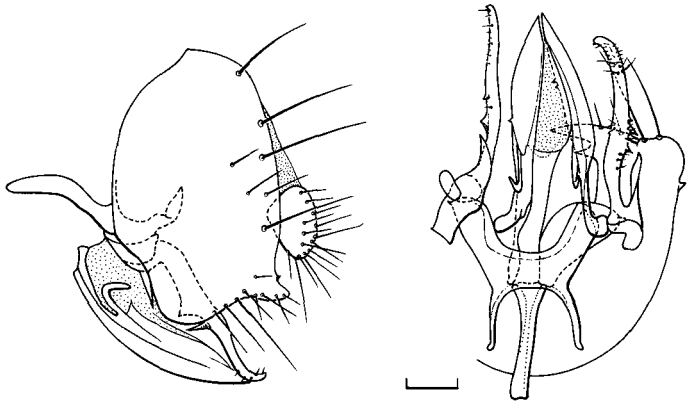

Fig. 39. *Homoneura* (*H.*) *trivittata* n. sp.

67. *Homoneura* (*H.*) *trypetoptera* (Hendel), n. comb.

Lauxania (*Sapromyza*) *trypetoptera* Hendel, 1908 : 27, 47.
Sapromyza histrio de Meijere, 1908 : 137.

The wing pattern and general coloration of this species are similar to those of *picta*. But *trypetoptera* differs in having a small hyaline spot on each side of anterior end of m-m, in T3-5 each with 4 large semicircular gray-dusted spots on anterior margin and a series of minute circular spots along posterior margin, and in femora yellow, each with a narrow brown ring preapically.

Protandrium ringed ; S4-5 each slightly wider than long, S6 as wide as long. Genitalia different from those of *picta* as follows : epandrium with 2 pairs of long bristles on dorsal side ; surstylus (Fig. 31) hooked ; hypandrium with apodeme extremely broadened posteriorly to form a lobe ; praegonite small and setose on tip ; postgonite absent ; aedeagus with a pair of teeth on dorsal and 2 pairs on ventral side ; aedeagal apodeme slightly shorter than aedeagus ; ejaculatory apodeme 55 μm long.

Other differences in appearance between them were given in Sasakawa's paper (1987).

Specimens examined. MALAYA : 1♀, Bkt. Bakar, nr. Machang, Kelantan, 9. XI. 1990 (M.S.) ; 6♂4♀, Kampong Jeram, Kelantan, 10. IX. 1990 (M.S.) ; 3♂5♀, Kuala Tahan, Pahang, primary forest, 12-14.. XII. 1958 (T.M.) ; 5♂6♀, King George V Nat'l Park, Kuala Tahan, Pahang, 7-15. XII. 1958 (J.G.) ; 1♀, Kampong Lalang, Pulau Tioman, Pahang, 14. IX. 1990 (M.S.) ; 3♂10♀, FRIM, Kepong, Selangor, 23-25. IX. 1990(M.S.). SABAH : 2♂, Sepilok Forest Reserve, 6. X. 1988 (M.S.) ; 3♂1♀, Tenompok, 13-15. II. 1959 (T.M.) ; 2♀, Liawan, 14-19. I. 1959 (T.M.) ; 2♀, Ranau, 28. IX. 1958 (L.Q.).

Distribution. Viet Nam, Thailand, Malaya, Java, Sumatra, Borneo (Sabah), Krakatau, Lombok, Philippines, Formosa, India, Nepal, Ceylon. New to Malaya and Borneo.

68. *Homoneura* (*H.*) *ungaranensis* (de Meijere)

Lauxania ungaranensis de Meijere, 1910 : 140.

This blackish species is unique in having brown spots on wings : 1 spot on forking point of Rs, around both crossveins, and at apices of R_{2+3} and M_{1+2} ; 2 spots on R_{4+5} in addition to apical one, of which 1st spot is connected scarcely with spot on m-m and the 2nd is connected with apical spot of R_{2+3}. It is characterized also by having 5-6 fine long *av* on f_3 of male.

Head bicolor (brown except parafrontalia, gena and back of head largely yellow), antenna testaceous yellow ; male T1-3(4) testaceous except dark lateral sides, 4(5)-9 black, female T1-7 entirely black ; marginal bristles on dorsal side of T distinctly longer than length of tergite ; protandrium ringed, with dorsal apodeme short, ventral bridge narrow ; S4-5 each about 1.3 times as long as wide, S6 shorter than S5, median pair of marginal bristles on S4-6 distinctly longer than the corresponding sternite ; surstylus (Fig. 40) narrow and projected ventrally ; cercus 2/3 height of epandrium ; hypandrium Y-shaped but narrowly bifurcated on anterior

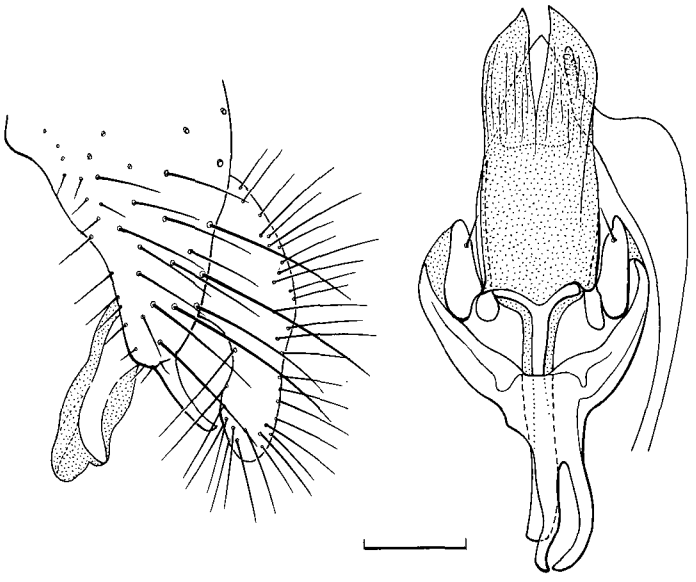

Fig. 40. *Homoneura* (*H.*) *ungaranensis* (de Meijere).

end, postgonite small; aedeagal apodeme slightly shorter than aedeagus.

Specimens examined. MALAYA: 1♂, Mt. Berinchang, Cameron Highlands, 1. I. 1959 (T.M.). SABAH: 2♂1♀, Sandakan, 20. XI. 1958 (T.M.); 3♂6♀, Tenompok, 48 km E. of Jesselton (Kota Kinabalu), 17-18. X. 1958 & 10-19. II. 1959 (T.M.); 9♂6♀, Bundu Tuhan, 18. II. 1959 (T.M.). SARAWAK: 5♂3♀, Nanga Pelagus, nr. Kapit, 7-14. VIII. 1958 (T.M.); 7♂1♀, Bidi, Bau District, 2-3. IX. 1958 (T.M.).

Distribution. Java, Borneo (Sabah, Sarawak), Malaya. New to Malaya and Borneo.

69. *Homoneura* (*H.*) *ypsilon* n. sp.

Diagnosis. This pale testaceous species has anteriorly fuscous wings, 2 pairs of long *acr* in addition to *prsc*, dark brown central spot and lateral bands on T4-6, Y-shaped hypandrium and protandrial sternite, and spinose praegonite, thus differing from *geomyzina* (Frey). Wing pattern and abdominal coloration of *ypsilon* are similar to those of *subcostalis* n. sp., but the structures of vein M_{3+4} and male genitalia are quite different.

Male. Pale testaceous; face and gena yellow, slightly whitish pruinose; parafrontalia shining; occiput brownish in small area with setulae; arista brown; palpus yellow. Mesonotum shining; wing with anterior margin brown, the brown marking connected with pale brown apical marking between apices of R_{4+5} and M_{1+2} and posteriorly extending to about middle longitudinal line of cell R_3, m-m distinctly brown-clouded but r-m clear; legs yellow, tarsal segments 2(3)-5 tinged with brown. T1-2 pale testaceous, posterior tergites brownish yellow, T4-6 each with brown median spot and lateral bands on posterior half; epandrium brown except on dorsal

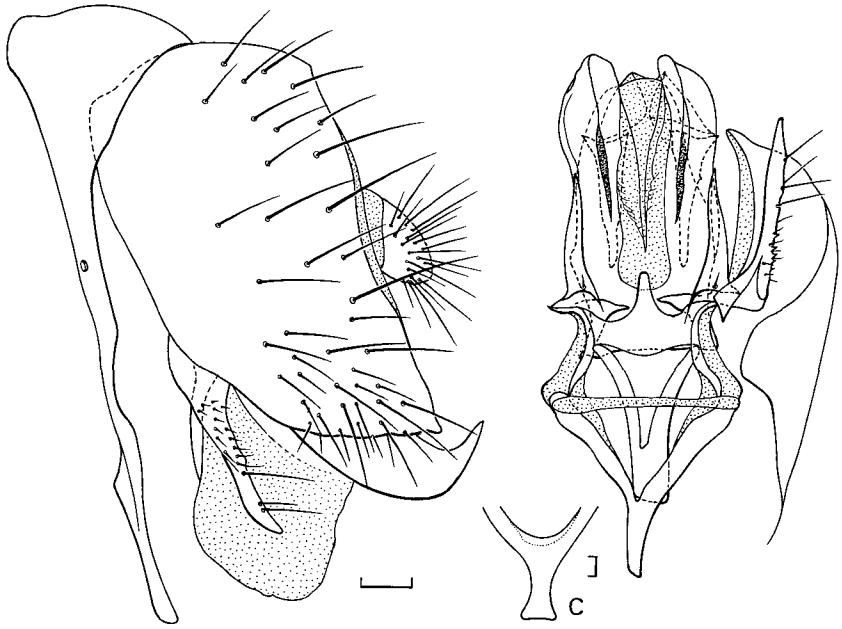

Fig. 41. *Homoneura* (*H.*) *ypsilon* n. sp. C, vnetral part of protandrium.

side yellow.

Frons as long as wide, a little wider than eye (1.9 : 17), parallel-sided ; lower *or* 3/4 of the upper ; *oc* 2/3 of lower *or* ; *oh* 2 between *or* ; face flat ; eye 1.2 times as high as wide ; gena 1/6 height of eye ; *pm* 5, short ; antennal segment 3 1.3 times as long as wide, slightly narrowing apically ; arista short-haired, with longest hair about 1/2 width of segment 3.

Mesonotum with 0+3 *dc*, 6 rows of *acr*, of which 1 presutural and 1 postsutural *acr* in addition to *prsc* are long and the former far beyond suture than 1st *dc*, the latter at middle between 1st and 2nd *dc*-levels ; *ipa* 3/4 of *opa* ; C-index 4.4, r-m slightly before middle of discal cell ; 4V-index 1.4, 5V-index 0.1 ; f_1 with 3 *pv*, f_2 with 5 *a* ; t_2 with 2 long and 1 short spurs, all t with *pd*.

Protandrium (Fig. 41) ringed, with sternite Y-shaped ; S5-6 each about 1.3 times as wide as long, S6 with a shallow excavation on posterior margin ; epandrium with surstylus upturned on distal end ; hypandrium Y-shaped ; praegonite spinose near base and with long setae before tip ; postgonite pointed apically, with a short seta on ventral base ; aedeagus with lateral sclerites distinctly dentate ; aedeagal apodeme 1/2 length of aedeagus.

Body length 4.7 mm, wing length 5.2 mm.

Holotype ♂, Kundasang, Sabah, Borneo, 15. VIII. 1969 (A.T.) (HYÔGO B1-000001).

Distribution. Borneo (Sabah).

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(Appendix for Sasakawa and Tho, 1990)

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